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TRANSACTIONS

OF THE

SIXTH ANNUAL MEETING

OF THE

AMERICAN LARYNGOLOGICAL ASSOCIATION

HELD IN THE CITY OF NEW YORK

MAY 12, 13, AND 14

1884

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TRANSACTIONS

OF THE

SIXTH ANNUAL MEETING

OF THE

AMERICAN LARYNGOLOGICAL ASSOCIATION,

HELD IN THE HALL OF THE ACADEMY OF MEDICINE, NEW YORK, MAY 12, 13, AND 14, 1884.

First Day—Morning Session.

THE meeting was called to order on Monday morning, May 12th, at ten o'clock, the President of the Association, Dr. Francke H. Bosworth, in the chair. The Vice-Presidents, Dr. S. W. Langmaid, of Boston, and Dr. Samuel Johnston, of Baltimore, were present, and occupied their places upon the platform.

The Secretary then proceeded to call the roll. The following-named Fellows were present during the Congress:

FRANCKE H. BOSWORTH, M. D., New York, President.
SAMUEL W. LANGMAID, M. D., Boston, 1st Vice-President.
SAMUEL JOHNSTON, M. D., Baltimore, 2d Vice-President.
D. BRYSON DELAVAN, M. D., New York, Secretary and Treasurer.
THOMAS R. FRENCH, M. D., Brooklyn, Librarian.
ANDREW H. SMITH, M. D., New York, Council.
MORRIS J. ASCH, M. D., New York, Council.
BEVERLEY ROBINSON, M. D., New York, Council.
FRANK DONALDSON, M. D., Baltimore, Council-elect.

C. E. BEAN, M. D., St. Paul.
C. W. CHAMBERLAIN, M. D., Hartford.
J. SOLIS-COHEN, M. D., Philadelphia.
W. H. DALY, M. D., Pittsburgh.
T. A. DE BLOIS, M. D., Boston.
J. H. DOUGLAS, M. D., New York.
L. ELSBERG, M. D., New York.
J. H. HARTMAN, M. D., Baltimore.
U. G. HITCHCOCK, M. D., New York.
EDGAR HOLDEN, M. D., Newark.
F. H. HOOPER, M. D., Boston.
E. F. INGALS, M. D., Chicago.
F. L. IVES, M. D., New York.
W. C. JARVIS, M. D., New York.
F. I. KNIGHT, M. D., Boston.
G. M. LEFFERTS, M. D., New York.
R. P. LINCOLN, M. D., New York.
J. N. MACKENZIE, M. D., Baltimore.
G. W. MAJOR, M. D., Montreal.
J. O. ROE, M. D., Rochester.
C. E. SAJOUS, M. D., Philadelphia.
C. SEILER, M. D., Philadelphia.
E. L. SHURLY, M. D., Detroit.

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Of the newly elected Fellows, there was present Clarence C. Rice, M. D., New York.

The meeting having been called to order, Dr. Bosworth delivered the following:

PRESIDENT'S ADDRESS.

Gentlemen:

It gives me much pleasure to offer you a most cordial greeting at this the opening of our Sixth Annual Congress, and, in behalf of the New York members, to extend to you a most hospitable welcome to New York city.

When in 1878 a few of us met at Buffalo to organize this Association, I think there was a feeling that our undertaking was something of an experiment, and that, in order to make it more than an experiment, earnest work and individual effort would be demanded from each one of us, and in this confidence the organization was completed. That our hope was not a mistaken one I need not say. The Association has been a success, and a most notable one. We have met year after year, bringing with us the results of our twelve months' work and observation, and, by comparing notes, learning from others, and imparting our own views, defending them if necessary or yielding to the stronger presentation, we have given a practical impulse to laryngology, have created an interest in its study, and excited an activity of investigation which has characterized no other period since Garcia read his paper before the Royal Society.

I think this can not be regarded as an over-statement. The progress made in our specialty in the past six years has been very great; the contributions to its literature have been not only numerous, but they have been of an eminently practical and valuable character; notable improvements have been made in our methods of treating diseases of the upper air-passages; old methods, which had been handed down to us from the early days of laryngology and which clung to us by the weight of respected names, have been finally estimated at their true value and have been cast aside; classifications of diseases based on the imperfect observation which had been the outgrowth of the early and immature literature of our specialty, and which had misled us for so long a time, have been discarded; and I am almost ready to say that a new laryngology has sprung up, based on practical observation of disease, a correct interpretation of symptoms, an intelligent appreciation of the anatomy of the air-tract, and a true estimate of the functions of the various regions. That this has all

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been done by our Association I do not say. That it has been very largely brought about by the work of the American school of laryngology I do believe, and that our Association represents the best work done on our side of the Atlantic I think but few will question. This assertion may seem a trifle immodest, but I have a great and growing respect for those qualities which it seems to me are characteristic of the American physician, viz.: the keen, alert, active mind by which he strives to learn how best to cure his patient, and the shrewd practical common sense by which he generally succeeds. And it seems to me that here in America our laryngologists have been working in this practical direction with a degree of success of which we may speak with justifiable pride. Our Association, then, in the six years of its existence, has accomplished good work, and gives promise of still better. The interest in it to-day is as great as when it was organized. The great danger to any special organization like this is that it may work itself out. No evidence of any tendencies of this kind have manifested themselves here, and we meet to-day with the promise of a meeting fully equal to any which has preceded it in the number in attendance, the number of the papers, and the variety of the subjects to be discussed.

Since we last met, the "Archives of Laryngology" has stopped publication. This is beyond question a great loss to each one of us, and one for which we shall find it most difficult to compensate. The loss to the Association is also a very great one, for it is to the "Archives" that we owe the creditable appearance, the freedom from errors, and the promptness of publication of the last four volumes of our Transactions. As you already know, however, arrangements have been made by which the publication of the annual volume will be continued—an arrangement with which I am sure all will be gratified, for it is with the "New York Medical Journal."

Our membership two years ago attained the full limit of fifty, and has remained so since. During the past year two resignations have been sent in, as you will learn from the Report of the Council, and candidates to fill the vacancies will be recommended to you. This suggests the propriety of the amendment to the constitution, to be voted upon at this meeting, of enlarging our limit. It seems a question to me whether we have the right to exclude from our membership, whatever be its limit, any one who by the character of his work has shown his fitness to be one of our Fellows. We certainly have not the right to say to the public that there are only fifty American laryngologists, and we are the fifty. The American Laryngological

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Association ought to be composed of all the men who are doing good work in our branch of medicine. Another point suggests itself in this connection. If our membership is full, a candidate must accompany his application for membership with a thesis, and both the application and the thesis may lie in the secretary's drawer till a vacancy occurs, and this may not be till the thesis has ceased to be of value.

Some question has been made as to whether we may not be embarrassed in selecting a place for our meetings in the future. I have only this to say, and in saying it I think I may safely speak for each of the New York members: This question need never be a source of embarrassment. We welcome you most heartily to New York today, and with equal heartiness we extend an invitation to make New York the permanent place of meeting. In saying this, we do not wish to presume on your good nature by asking you to come to us every year without ever returning your visit. We simply say that we shall be more than glad to have you come to us as often as you can, and if you will make it every year, you will do us an honor and pleasure. At the same time we stand ready to go elsewhere if you so desire.

It has been a custom of so long standing that it has become an established precedent, that your presiding officer for the year shall inaugurate this meeting by reading a paper at the opening of the session. In obedience to this custom I have prepared, not an exhaustive paper, but rather some short, suggestive considerations.

Paper.

THE CLINICAL SIGNIFICANCE OF FIBRINOUS EXUDATIONS UPON THE MUCOUS MEMBRANE OF THE UPPER AIR-PASSAGES.

By FRANCKE H. BOSWORTH, M. D.

BY clinical observation, inflammatory affections of the upper air-tract divide themselves, by sharp, well-defined lines, into catarrhal inflammations and those characterized by fibrinous exudations. In the former we have to do with a morbid process, usually of a mild type, of limited extent, and of short duration. In the very large majority of cases it is due to taking cold, which gives rise to a more localized perversion of the ordinary process of nutrition and growth, that exaggeration of the normal physiological processes which goes on in the part in a state of health, and which we call a catarrhal in-

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flammation. The process is in no essential sense a grave one; it is attended with no dangerous tendencies except such as may be adventitious, and the constitutional disturbance, if there be any, is measured by the extent of the local morbid process. In other words, the fever, if it be present, is limited by the extent of inflammatory action, and is merely symptomatic of it. The disease itself is purely a local one.

On the other hand, inflammatory processes characterized by the exudation of a fibrinous material in or upon the surface of the mucous membrane indicates a disease totally distinct, and in every aspect differing from a catarrhal process. In the latter the phenomena differ in no essential manner from health except in the exaggerated activity. There is increased blood supply, there is increased cell proliferation, there is increased secretion. These processes all belong to the membrane in health, and hence inflammation here only consists in an intense activity of all the normal physiological processes. In the inflammatory processes, on the other hand, characterized by a fibrinous exudation, the essential features of the morbid process are different. It is generally stated that the two processes are much the same, with the exception that in the one case there is the additional element of a fibrinous exudation. From a clinical standpoint, this is scarcely true. Hyperæmia is common to each, but more marked in the catarrhal process. Hypersecretion is common to each, but much more active in the simpler disease. Cell proliferation is common to each, but, while in a catarrhal inflammation this is characterized by intense activity, in an exudative affection this phenomenon is not a prominent incident. But while in these three features the catarrhal disease is much more active, we have in the exudative process an element added which indicates the existence of, not a mere local process, but a constitutional affection, and one which may be attended with great danger to life.

By far the most common of all inflammatory affections occurring in the upper air tract, attended by a fibrinous exudation, is what is known as *acute follicular tonsillitis.* A child or an adult, for it is common to all ages, after a few hours or, perhaps, a day of general malaise, is seized with a chill followed by high fever. The chill is usually well marked, but may be only decided chilly sensations. Following the chill, well-marked febrile symptoms set in, characterized by hot skin, rapid pulse, thirst, pain in the bones, anorexia, and all the symptoms of active fever, the temperature often rising to 103° or 104°. Painful symptoms with reference to the fauces soon

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set in, with marked dysphagia. An examination of the throat reveals one or both tonsils swollen, hyperæmic, and dotted over with a number of pearly white patches. The essential morbid condition here consists in an exudation, into the crypts of the follicles which go to make up the tonsils, of a fibrinous material which distends their cavities and shows itself at their orifices. An examination of the material poured out shows it to be in the main composed of delicate fibrinous fibrillæ, inclosing in their meshes a number of lymphoid corpuscles. As the disease progresses, the fever diminishes in activity, the morbid process in the tonsils gradually disappears, and, at the end of from five to eight days, it terminates in resolution. The prominent features of the attack are the marked febrile motion which characterizes the onset of the disease and the marked constitutional disturbance which attends its course, the prostration often assuming a typhoid aspect.

We have here, then, a limited and comparatively trivial morbid process in the fauces attended with such marked systemic disturbance that I think it must be conceded that we have to deal with something more than the results of an ordinary cold. The whole train of symptoms is such that it seems to me that we may rather regard it as akin to the essential fevers, the fever and general systemic disturbance being such that we can not regard them as symptomatic of the limited inflammatory process in the tonsils. A clearer and more intelligent appreciation of the affection can be attained, then, by regarding it as not differing in any great degree from the exanthemata, but by considering it one of the continued fevers with a local eruption on the tonsils, the characteristic appearances of the eruption being as distinctive and pathognomonic as the umbilicated pustule is of variola.

If this conclusion be a justifiable one, we must seek further for its cause than in taking cold. I believe it to be a germ disease. A floating germ, whose origin is in many cases to be found in defective drain-pipes, bad sewage, or some of the many problematic sources of our zymotic diseases, lodges upon the tonsils, and, finding a favorable nidus for its development, makes its way into the blood, causing the general systemic outbreak which characterizes the affection, while at the same time a local morbid process is set up at the point of inoculation. It may be claimed that many of these cases seem to develop from a recognized exposure to cold, just as many cases of croupous laryngitis are preceded by a catarrhal laryngitis. The true explanation of this is that a catarrhal inflammation in the

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fauces favors the lodgment of the germ; in other words, predisposes to the attack.

Another group of cases which is characterized by a fibrinous exudation is the so-called *acute follicular pharyngitis.* In these cases the train of symptoms is identical with those already described. The only difference is that the follicles of the lower pharynx are involved in place of those of the tonsil. In these cases, the same conclusion may be drawn as from the tonsillar disease, the only difference being in the locality of the eruption.

Another group of cases is met with in which the same morbid process occurs in the follicles of the pharyngeal tonsil, constituting an acute follicular tonsillitis, if we may so call it, of Luschka's tonsil. Anatomically, physiologically, and pathologically, I know no difference between the faucial and pharyngeal tonsil. Their general construction is identical; the function of both is to supply mucus as a lubricant to the lower pharynx, which is but sparsely supplied with mucous glands, and their diseases are also the same. Quinsy, or so-called acute tonsillitis, is the only exception, but this is not a disease of the tonsil, but rather of the areolar tissue of the soft palate.

Acute follicular tonsillitis of Luschka's tonsil has never, as far as I know, been described, and yet it is of very common occurrence. It differs in no essential degree from the disease first alluded to, its onset and progress being marked by the same active systemic disturbance, and its clinical significance being also the same as that of the former disease.

Still another class of cases, which forms a group by itself, is croupous tonsillitis. In these cases a child or an adult—far more frequently the former—is seized with a chill followed by general febrile movement and pain referable to the fauces. The febrile movement is, as a rule, of a notably active character, the pulse being rapid, the skin hot and dry, thirst and anorexia well marked, and the temperature reaching 102° to 104°. An examination shows one or both tonsils swollen, hyperæmic, and the seat of a small patch of a fibrinous exudation of a grayish white or bluish white color. A close and careful examination of the patch shows it to be a clean, clear, white membrane, with no noticeable secretion. Now, if we take a slender probe, and very gently lift the edge of the membrane, and we find that it is easily removed, and, moreover, that after removal the mucous membrane beneath presents a fairly normal appearance—in other words, if we find that the exudation can be peeled off without rupturing any blood-vessels or causing hæmorrhage—I think that there can be no

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question that we have by this procedure obtained most valuable information by which we can form a fairly correct opinion as to the character of the disease with which we have to deal—its courses, dangers, and tendencies. In adults and patients who have passed beyond the age of childhood we may say with certainty that we have to deal with a self-limited disease, and one which will run its course in from five to eight days, and that it involves no dangerous tendencies.

In young children, on the contrary, the development of a fibrinous exudation in the fauces means the possibility of the occurrence of one of the gravest diseases with which we have to deal—croupous laryngitis. A child is attacked primarily with a train of general symptoms, as noted before—a chill, and general febrile motion of an unquestionably sthenic type, followed by a fibrinous deposit on one or both tonsils. The case progresses without any untoward symptoms for two or three days, when laryngeal symptoms develop, and a fibrinous exudation of the same character develops in the larynx. In these cases, as in the acute follicular diseases first described, I think we have to do with a specific germ which lodges upon the mucous membrane of the fauces, where it reproduces itself, setting up local inflammatory action, while at the same time it makes its way into the circulation, thus producing the systemic condition which characterizes these affections—viz., sthenic fever. In childhood the germ finds a favorable nidus for its development upon the tonsils, and also upon the mucous membrane of the larynx. In many cases the germ which excites the laryngeal complication probably has its origin in the reproduction which occurs at the point of primary inoculation—viz., the tonsillar false membrane. With increasing years, the changes which take place in the laryngeal membrane render it a less favorable nidus for the development of the germ, and so in adult life we have the croupous deposits upon the fauces, without involving any additional danger of a laryngeal complication. In itself, a croupous membrane is not dangerous. Occurring on the tonsil of an adult, it involves a week of moderate illness. In children, and occurring in the larynx, it constitutes one of the gravest of diseases, but mainly in the mechanical obstruction to respiration. I should say here that the term croupous membrane is used, as originally laid down by Virchow, to describe a fibrinous exudation deposited on the surface of a mucous membrane, in contradistinction from a diphtheritic membrane, which infiltrates the mucous membrane to a greater or less extent, and can not be separated from it.

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In another group of cases we have the well-marked preliminary chill followed by general febrile disturbance, with faucial exudation; but the characteristics of the local morbid process, as well as the systemic symptoms, are entirely different. The febrile motion is of a different type, being of a notably asthenic character; the pulse is rapid but weak; the temperature is lower, being 101° to 102°. The skin does not usually present the hot, flushed aspect of the sthenic fever, and there is every appearance of marked depression. If we examine the fauces on the first day, we find deposited upon one or both tonsils a thick, velvety, distinctly yellow false membrane, markedly raised above the surface of a moist-looking membrane, and a notable amount of secretion about its border. If we take a probe and try to raise its edge, we find it impossible to do so without lacerating the tissues. On the second day we find that a decided change has taken place in the membrane. The local necrosis has taken place, which is the necessary result of the fibrinous exudation having permeated the mucous membrane; and the whole appearance is of a slough, a blackish-yellow mass, with an offensive discharge oozing from its borders and giving forth a fœtid odor. Here also the local morbid process may be confined to the fauces, or in a few days laryngeal symptoms may develop, and a false membrane form in the larynx. Unlike the croupous form of fibrinous deposits, the tendency to the occurrence of laryngeal complication is not confined to children.

Diphtheria, in all its aspects, is a septic and asthenic disease, and presents a totally distinct clinical picture from croup; and yet, it seems to me, there can be but little doubt but they are both germ diseases. In diphtheria, the germ lodges upon the mucous membrane of the fauces, and, exciting a local inflammatory process at its point of entrance, makes its way into the blood, producing there the train of symptoms which constitute the essential constitutional features of the disease—viz., primary septic blood-poisoning. At the point of inoculation the germ reproduces itself, and constitutes the source of a secondary blood-poisoning by absorption from the false membrane in the fauces.

In addition to the sharply defined groups of cases which I have briefly described, we all of us occasionally meet with cases which it is impossible to assign to the croupous or diphtheritic group. Fortunately, these irregular and indefinite cases are rare. In the very large majority of cases, however, I think that we may assign a given case to one of the groups described with tolerable certainty as to the correctness of our observation.

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It is not the province of this paper to discuss the question of the identity of croup and diphtheria. In 1857 Virchow enunciated the doctrine that, from a pathological point of view, there were two distinct pathological processes to be found in connection with false membranes in the air-tract. In the one case a fibrinous exudation was deposited on the surface of the mucous membrane, and that this constituted a croupous inflammation; on the other hand, a fibrinous exudation which permeated the mucous membrane constituted a diphtheritic inflammation. As is well known, Virchow subsequently abandoned this distinction, on the ground that the two pathological processes in many cases merged so gradually one into the other that it was impossible to assign them to either class with certainty. No one, of course, doubts the correctness of Virchow's later views, and yet, from a clinical standpoint, I regard the distinction as one of the very greatest importance. And while, as already stated, we undoubtedly meet with cases which it is difficult to assign with certainty to either class, these cases are rare, and, in the very large majority of cases, the differential diagnosis is not difficult if we carefully examine the local process.

The points, then, on which I would place especial emphasis are as follows:

1. A fibrinous exudation which occurs in the crypts of the follicles of the faucial or pharyngeal tonsil, or of the mucous membrane of the lower pharynx, has no tendency to extend, and characterizes a disease which is self-limited and which involves no dangerous tendencies.

2. A fibrinous exudation which occurs upon the surface of the tonsil or of the mucous membrane of the fauces, constituting a croupous membrane, so called, presents gross appearances by which it can be unmistakably recognized. It is easily detected, and can be peeled off from the parts beneath without lacerating the tissues. It is a white, clean, healthy-looking membrane, and presents every aspect of a living tissue.

3. A croupous membrane in the fauces of an adult marks the existence of a disease which, while being undoubtedly a blood-poison, is still a self-limited affection, and one which involves no danger to life.

4. A croupous membrane forming in the fauces of a child marks the occurrence of the same disease as a croupous membrane in an adult; but in the child there is the additional danger of a new center of development occurring in the larynx, where it may involve the

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greatest danger to life, but mainly as a mechanical obstruction to breathing.

5. A diphtheritic membrane developing in the fauces marks the occurrence of a disease which is dangerous to life, not only from primary and secondary blood-poisoning, but also from the tendency to the development of the same morbid process in the larynx.

Discussion.

Dr. Beverley Robinson, of New York.—I would take exception, with due respect to the author of the paper, to certain statements which he has made. In the first place, with regard to the question of follicular tonsillitis, so-called, appearing as an essential fever, I think, from a clinical point of view, that this is a mistake, because, while it is certainly true that in a certain number of instances, particularly in children, the fever does last for a number of days, and is evidently connected with the appearance of cheesy masses over the follicles of the tonsils, yet in quite as many instances the fever is of very short duration, and, although it may be ushered in with phenomena of some gravity, in such cases I have seen it subside within from twenty-four to forty-eight hours. Moreover, as far as I am aware, and I say this with a little hesitancy, the pathological appearances of the exudation from the interior of the follicles does not resemble, microscopically, the condition to which the President alluded in speaking of the true croupous membrane. They are simply cheesy masses which are pressed out from the interior of the crypts, and do not in any sense partake of the nature of an exudation which we consider ordinarily as being fibrinous.

With regard to the question of croupous tonsillitis, I will also remark that, while there are perhaps many cases in which the membrane itself does characterize the type of a disease which is only of certain local gravity, particularly when it attacks the larynx, but which is not a constitutional affection, yet I have seen cases in which the mucous membrane did not seem to be incorporated with the false membrane itself, where the cases seemed to be of mild type, yet after a few days they became very serious; the membrane, which at first was white and easily detached, afterward became dark, and so attached to the underlying tissues that I could not say the case was not one of diphtheria. I think there is a certain number of cases ordinarily called croupous tonsillitis which in all probability begin, as stated by several authors, among them Dr. Da Costa, in a herpetic eruption of the tonsils. I think that such a disease unquestionably exists. I have seen one or two cases almost from their commencement, and think the disease should be considered a follicular tonsillitis, or a herpetic tonsillitis rather, a form of tonsillitis alluded to in the first part of the President's paper. I might here say, as to the origin of these affections in the local absorption of certain germs, that while the President's views, shared by many others, may have a theoretical basis,

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they are in my mind far from proven. We unquestionably do find in these affections of the air-passages germs—call them bacteria or what you will—but the microscope will fail to show the slightest difference in their appearance, whether they be present in one affection or another, and we are unable to say whether the germs were active in carrying the poison or whether they were entirely innoxious.

It is very wrong, in my opinion, to look upon diphtheria as always being one and the same disease in the sense of its absolute gravity. There are different gradations in the gravity of diphtheria, as in all infectious disorders. As we meet with cases of scarlet fever and measles of mild type, so also of diphtheria, and the prognosis must vary according to the circumstances of the case, and yet the disease is essentially the same in each case.

Dr. William C. Jarvis, of New York.—I can, for the most part, substantiate the views of Dr. Bosworth as regards the gross pathology of the exudation met with in the upper air-passages. Several years ago my attention was first called to inflammation of the pharyngeal tonsil by the occurrence of the affection in my own person. My inference as to the implication of the third tonsil was afterward verified by repeated observations upon numerous subjects of this disease. A feature of acute follicular pharyngitis which does not seem to have received any attention is one in which the secretion is retained, eventually escaping upon rupture of the membrane, and covering the pharynx with a white membrane. Such a change does not occur when the inflamed follicles remain patent.

The President.—I must take exception to Dr. Robinson's belief that follicular tonsillitis, in any sense of the word, is characterized by cheesy deposits in the crypts of the tonsils. The exudation, in its gross appearances and microscopical characters, while not presenting exactly the same conditions which we see in the croupous membrane on the surface, resembles it sufficiently to warrant us in the conclusion that the two conditions are very nearly allied, if not identical, the differences being only such as we would expect to find—the membrane in the one case being deposited upon the surface, and, in the other, being confined to the small crypts going to make up the tonsils. Again, in some cases the membrane overflows the crypts, so to speak, and spreads out on the surface, constituting a membrane in the true sense of the word.

The point which I wish distinctly to emphasize is, that we can, by examination, throw a great deal of light on the clinical tendencies of inflammatory diseases of the fauces. Heretofore, as you know, physicians have commonly limited themselves to making examination, and drawing their conclusions, simply from the use of the tongue depressor. It seems to me, from a clinical point of view, the careful examination of the gross appearances of the exudation in the fauces has not received the attention which it should. If, for instance, in acute follicular tonsillitis we can recognize by the gross appearances a membrane, which will ena-

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ble us to say in the case of the adult exactly what course the disease is going to follow, or, in the case of the child, that there is danger of a new center of development—the larynx—and of consequent obstruction to the air-passages, we shall take an important step in advance.

As regards the germ source of this disease, it seems to me that, in the absence of any more definite theory, this presents the best explanation of the ætiology. It can not be a disease which results from taking cold; it is something more than that. It presents all the general systemic disturbances which characterize the essential fevers which are self-limited in nature.

Dr. F. I. Knight, of Boston.—I would call attention to one point which I think escapes the attention of physicians very generally in these acute affections of the upper air-passages, and I do so because I think it practically important. It relates to the increased susceptibility to diphtheritic infection during the existence of any simple acute inflammation of the air-passages, as follicular pharyngitis or simple pharyngitis. This fact induces me, and I think it should induce others, to give a guarded prognosis in even simple acute affections.

Dr. S. W. Langmaid, of Boston, thought there might be the symptoms of only a simple pharyngitis in the beginning, while the case, in fact, began as one of diphtheria, and left no doubt of its nature later.

The President explained that the point made in his paper was that a membrane in a state of acute inflammation afforded a better nidus for the germ which developed the diphtheritic or croupous process than the healthy membrane did.

Paper.

A CONTRIBUTION TO THE STUDY OF CONGENITAL SYPHILIS.

By JOHN N. MACKENZIE, M. D., Baltimore.

I HAVE selected the case, whose essential features are given below, from my note-book, not only on account of its peculiar interest, but also to serve as the text for some remarks on the manifestations of congenital syphilis in the throat, and their behavior under the influence of acute disease.

Agnes C., aged eight, the child of syphilitic parents, was brought to the London Hospital for Diseases of the Throat and Chest in the latter part of September, 1879. Her history was as follows: Healthy at birth, When five weeks old, lost power in the right upper extremity. This lasted for five weeks, during which time she had no control over the limb. When eight weeks old, contracted a diarrhœa which lasted uninterruptedly for nine months. With the diarrhœa, round, irregular, elevated patches of a red color appeared on the back and buttocks, which were

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associated later on with an eruption around the anus and genitals. These lesions disappeared some months afterward with an attack of measles. When an infant, would cry out in the night, clinch her thumbs, and burrow her head in the pillow.

From her first to her third year, an interval of perfect health. At the age of three, inflammation, with a cloudy condition of the right eye, appeared, followed in two weeks by implication of the left. The eyes remained inflamed for two years. (The patient's letter from the Royal Ophthalmic Hospital states the condition to have been keratitis.) At the expiration of this time both upper eyelids became completely paralyzed, so that she had no power over them whatever. She could lift them up with her fingers, and frequently did so; but the muscular control of the lids was gone. There was no inflammation of the eyes beyond some remains of the keratitis at the time, and their exposure to light gave rise to no irritation. The mother noticed nothing wrong about the eyeballs during this period. With the ptosis the child complained of intense occipital cephalalgia; convulsive movements occurred during sleep, during which she would contract her brows and rub her head with her hands, leading the mother to suspect trouble with the brain. These symptoms lasted for over a month, at the end of which time, together with the paralytic condition of the lids, they completely disappeared. (During this period she was under intelligent medical supervision, but I am unable to discover what treatment was adopted.)

When they had passed away, the mother noticed for the first time that the right eyeball was turned inward toward the nose, and that she had become deaf in the right ear, from which there issued a slight but constant discharge. Shortly afterward a little white spot appeared on the left tonsil, which slowly ulcerated, the ulceration involving the whole of the back portion of the throat. At the same time she complained of great difficulty in deglutition and pain in the bones, the cervical glands became enlarged, she spoke in a nasal tone of voice, and had a profuse discharge from the nose. During the period of sore throat there was suppuration of the right lachrymal sac, which opened, and continued to discharge for eighteen months. The left sac then became inflamed, suppurated, and ruptured spontaneously, and the discharge has been gradually diminishing in quantity since. The ulceration of the throat healed slowly; would constantly break out afresh; in fact, it never completely cicatrized.

In August, 1879, the child became suddenly aphonic from exposure to cold, and, in the latter part of September, was brought to the hospital suffering from dysphagia and dyspnœa of several weeks' duration.

Condition on Application at the Clinic.—Large head, prominent frontal eminences; cloudy corneæ, opacity of the right lens; right internal strabismus; marked flattening of the nasal bones and prominence of the lower jaw; the remains of a dacrocystitis of the left side. The pegged

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condition of the teeth is absent. Muco-purulent catarrh of nose and middle ear. On looking into the mouth, the whole of the hard palate is seen to be in a state of active ulceration, and there is necrosis with perforation of its central portion. The palatal destruction extends over the anterior arch of the alveolar ridge, involving the bone to a limited extent. The soft palate, uvula, and anterior faucial pillars are completely destroyed, and the posterior wall of the pharynx is the seat of a large, angry-looking ulcer which extends into the naso-pharynx as far upward as the view extends. The patient has to keep her handkerchief constantly to her mouth to absorb the discharge, which accumulates with great rapidity.

Laryngoscopic examination is not possible; but there is absolute aphonia, with dyspnœa, and the glands at the cornua of the hyoid bone are hard and swollen.

Liquids and solids, which are not finely divided, return through the nose, and the little patient complains of cough, pain in the head, and night sweats.

The ulceration continued to advance, in spite of tonic and anti-syphilitic treatment, until the 18th of October, when the patient was seized with scarlet fever of a mild type. With the appearance of the exanthem the ulceration in the throat began at once to heal, and, when the stage of desquamation was reached, cicatrization was complete, the dyspnœa and dysphagia mitigated, and the voice restored.

Shortly after convalescence the ulceration became again active, and in the early part of the following December a severe, acute pneumonia supervened. The pulmonary inflammation, with which she was confined to the house for four weeks, seemed to exercise no appreciable effect upon the palato-pharyngeal ulceration, which only cicatrized some weeks after resolution had taken place.

The throat then presented the following appearances: The hard palate was covered with cicatrices, and there was a small point of incipient ulceration at its posterior portion. The palate was continuous behind with a dense mass of cicatricial tissue which completely filled the fauces and pharynx, and in which all trace of the original anatomy of these parts was lost. In its center a small, oval depression existed, which communicated with the parts below by an aperture, through which the tip of the little finger could not be passed. From this central sulcus, which represented the remains of the pharyngeal cavity, a small contracted passage led into the naso-pharynx which would just admit an ordinary probe. The child breathed entirely through her mouth, upon closing which, the respiration had a loud, roaring sound. By forcible expiration she could drive a faint column of air through the nose.

Before passing to the consideration of the subject to which I desire to call special attention, there are two features in the above case that deserve particular notice.

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While deep ulceration of the pharynx (I refer to the *lower* pharynx) is not rare in congenital syphilis, such a degree of resulting stenosis is excessively uncommon. I know of but two similar cases. In the one,* a mere slit formed the only communication with the structures beneath, and in the other† the pharynx was so constricted as to scarcely admit the point of the little finger.

Of great interest, too, is *the paralysis of both upper eyelids.* The history of the case would point to a cerebral lesion as its probable cause, possibly a gummatous deposit in the course of the oculomotorius nerve. The subsequent paralysis of the abducent and the symptoms referable to the organ of hearing on the same side may also be susceptible of a similar explanation. Any reasonable doubt as to the syphilitic nature of the paralysis would be dispelled by the easy exclusion of other causes and the curative effect of (presumedly anti-syphilitic) treatment. The case, then, adds one to the short list of affections of the cranial nerves in hereditary syphilis observed by Graefe,‡ Barlow,# Dowse,‖ and Galezowski.△

In the "American Journal of the Medical Sciences" for October,◊ 1880, I called attention to the frequency with which the throat is involved in congenital syphilis, and gave a systematic description of the lesions which are found in the pharyngo-bronchial tract and œsophagus during the course of that disease. In opposition to the then generally received doctrine, I ventured to maintain, as the result of careful investigation of the subject, that, so far from being rare, as was generally supposed, laryngeal affections in congenital syphilis are among the most common and characteristic of its pathological phenomena, and that the invasion of the larynx may be looked for with the same confidence in the congenital as in the acquired form of the disease. Further experience and the study of cases recorded by others have only served to strengthen the positions taken in the paper referred to and the views there expressed, for which I must refer to the original.

Among other things, the following conclusions were reached in

* Catti, "Wiener med. Presse," No. 18, May 2, 1875.

† Levis, "Med. and Surg. Reporter," Philadelphia, May 3, 1879, p. 381.

‡ Virchow's "Archiv," Bd. lxxxiv, S. 269.

"Trans. of the Pathological Society of London," 1877.

‖ "The Brain and its Diseases," vol. i, p. 76.

△ "Recueil d'ophthalm.," Aug., 1879, p. 454.

◊ "Congenital Syphilis of the Throat; based on the Study of 150 Cases," N. S. clx, p. 321.

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reference to deep, destructive ulceration of the oro-pharyngeal cavities: 1. That deep ulceration may invade the palate, pharynx, and naso-pharynx at any period of life from the first week up to the age of puberty. Thus, of thirty cases analyzed with reference to the period of invasion, fourteen occurred within the first year, and ten within the first six months of life, the remainder occurring at periods more or less advanced toward puberty. 2. When the eruption of inherited syphilis is apparently delayed until the latter period, that lesions of the palate and pharynx are found with a peculiar constancy, and often first attract attention to the existence of a diathesis of which they are the sole pathological expression. 3. That females are attacked more frequently than males. Thus, out of 69 cases of pharyngeal ulceration, 41 occurred in the former sex. 4. That ulceration may occur in any situation; but its most frequent seat is the palate, for which it exhibits the closest elective affinity. 5. That, when situated at the posterior portion of the hard palate, the tendency is to involve the soft palate and velum, and thence to invade the naso-pharynx and nose; while, situated more anteriorly, it seeks a more direct pathway to the latter, which is established by perforation of the bone. 6. That the next most common seats of ulceration in order of frequency are the fauces, nasopharynx, posterior pharyngeal wall, nasal fossa and septum, tongue, and gums. 7. That ulceration, especially that of the palate, shows a disposition to centrality of position, together with a special tendency to caries and necrosis of the bone, a fact probably explicable by the great vascularity of the periosteum and medullary membrane in youth. 8. That the tendency to necrosis exists at all periods of life, but especially in early youth, when it is more destructive and less amenable to treatment. 9. That while deep pharyngeal ulceration generally precedes or co-exists with similar affections of the larynx, the latter occurs too without evidence of pre-existing pharyngeal lesions. 10. That laryngeal ulceration does not commonly follow the pharyngeal destruction of so-called latent syphilis, those palato-pharyngeal ulcerations found in tardy congenital syphilis having little tendency to invasion of the larynx, but rather to implication of the nasal pharynx and nose. 11. That simultaneous or consecutive ulceration of the palate, pharynx, and nose seems to be characteristic of syphilis, or at least occurs more frequently in this than in any other disease.

I bring these facts again into prominence because they differ from commonly accepted views, and because they possess at least a certain value, by reason of the method by which they were obtained.

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I desire also to reiterate what was said in connection with the confusion of these lesions with so-called "scrofulous" ulceration. Without entering into a discussion of the subject, suffice it to say that there is no just ground for belief in an ulcerative scrofulide of the throat. It needs only the most superficial review of the writings of those who maintain its separate existence to show the utter confusion which prevails as the result of erroneous views, handed down among the traditions of an obsolete pathology.

It is obviously a point of great practical importance that this fact should be recognized, and especially in view of the rapidly destructive tendency of inherited syphilitic ulceration in the oro-pharyngeal cavities and larynx.

The throat ulceration of congenital syphilis not only exhibits a special tendency to rapid invasion of the deeper tissues; it often possesses an inherent virulence which places it apparently beyond the reach of therapeutic control. This is markedly true of the ulceration which occurs in the earlier years of life. Cases are now and then encountered where the ulcers stubbornly refuse to cicatrize, or do so sluggishly and imperfectly, healing at one point and becoming simultaneously active at others. *Under such circumstances, when remedial measures are apparently of little or no avail, they sometimes cicatrize, as if by magic, on the accession of an acute disease.* It is to this that I wish to direct particular attention.

The clinical study of the cases upon the analysis of which the report referred to was based disclosed certain striking facts in connection with the influence of some of the ordinary infectious diseases of childhood upon the progress of the inherited syphilitic affection. From the historical narratives furnished by this particular group of cases, it would appear (1) *that, while congenital syphilis affords no absolute protection against certain acute infectious diseases, its existence in the individual seems often, other things being equal, to mitigate their severity and exert a favorable influence on their course;* (2) *that certain acute diseases, accompanied by an exanthem, favor the dissipation, at least temporarily, of the throat and other manifestations of the disease;* (3) *that while at no period of the disease is the child exempt from these affections, they are more liable to be contracted during the period of latency—that curious interval of apparent health in congenital syphilis which Cazenave has poetically called the sleep of the virus.*

These remarks are limited to scarlet fever, measles, and chicken-pox, but they could doubtless be extended to embrace others of the

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exanthemata; or, in other words, to those diseases which present a certain analogical resemblance to syphilis.

They do not apply, for obvious reasons, in the case of excessive virulence of the syphilitic cachexia or malignant epidemic influence of the intercurrent disease.

Of special interest is the effect produced by acute febrile disease upon the throat lesions of congenital syphilis. *Chronic inflammatory conditions and ulceration of the larynx, pharynx, and nasal passages are often influenced in a remarkable manner through the presence in the individual of an intercurrent febrile affection. This is, moreover, eminently true of those acute blood diseases with special tendency to local manifestations in the throat, such as scarlet fever, measles, diphtheria, etc. According to personal experience, scarlet fever and measles exert, as a rule, a favorable influence on the course of the throat affection, their supervention being of itself sufficient to cause its complete disappearance. The poisons of the two diseases in their circulation in these regions appear to be mutually destructive, and the throat escapes by virtue of such reciprocal antagonism.* The cure here may be permanent, or relapses of the inflammatory or ulcerative process may follow the removal of the antagonistic influence of the intercurrent disease.*

These remarks do not apply to diphtheria. When this affection supervenes during the existence of lesions in the throat, the patients rapidly succumb to the disease. The existence of syphilis in the child apparently increases the tendency to membranous formation; indeed, in some instances, apart from the presence of the diphtheritic process, there seems to be a *special tendency to fibrinous formation in the nose and retro-nasal space.*

The influence of acute disease upon the manifestations of constitutional syphilis is a subject which has received some attention at the hands of syphilographers, especially certain of the French school; but very little is known as yet, beyond the empirical fact, that the lesions of that disease, and especially the cutaneous syphilides, are often modified by the introduction into the blood of the virus of an intercurrent febrile affection. This modification may consist either in the permanent or temporary dissipation of existing syphilitic lesions, or in the exaggeration or intensification of the morbid process. Thus, for example, various syphilitic affections, such as skin eruptions, exostoses, etc., have been observed to disappear during the

* It is quite possible that this may also be true of other mucous surfaces of the body.

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course of erysipelas,* acute rheumatism,† cholerine,‡ variola,# febrile furunculosis,‖ etc. Laségue △ has recorded a case of ulceration of the pharynx and tonsils which disappeared during an attack of erysipelas, while in a similar one observed by Martellière ◊ a fatal result ensued from that disease. The dissipation of syphilitic eruptions has also occurred during pregnancy,⇓ and as the result of vaccination,⇕ and there is a case on record where the latter apparently exerted a curative influence in caries of the pharyngeal vault.⇞

The remarkable power of erysipelas over the cutaneous syphilides has suggested its artificial production as a therapeutic agent in these affections,§ while their behavior under the operation of the vaccine virus led to the now almost forgotten practice of Lukonski.¶ It has, finally, even been proposed by an enthusiastic pupil of M. Hardy to inoculate the poison of small-pox in cases of syphilis which have resisted all other methods of treatment.**

It is sufficiently evident, then, that a reciprocal antagonism exists between the poison of syphilis and that of a number of acute diseases. By what pathological law this is brought about is, in the present state of our knowledge of the mutual relations of disease, a matter of pure speculation. In the case whose history has been recited above it is interesting to contrast the curative effect of the

* *Vide* Cazenave and Schedel, "Practical Synopsis of Cutan. Dis.," etc., Phila., 1829, p. 353; Rayer, "Traité des mal. de la peau," Paris, 1835; Lamarche, "De l'érysipèle salutaire," Thèse de Paris, 1856, and the excellent articles of Mauriac; "Étude clinique sur l'influence d'érysipelas dans la syphilis," Paris, 1873; published also in the "Gaz. des hôpitaux," Nouv. sér., 1873, pp. 305, 321, 346, 385, 410, 443, 466, 506, 546, 569, 594, 601. See, also, Bidenkap's case (cited by Bäumler, von Ziemssen's "Cyclopædia," Am. ed., vol. iii, p. 98, 1875).

† Rayer, *op. cit.*, p. 546 (Mauriac); see also Jourjon, "Infl. des mal. aiguës sur quelques manifestations cutan. de la syph.," Thèse de Paris, 1870.

‡ Cazenave, "Traité des syphilides," p. 593 (Mauriac).

\# Gore, "Lancet," Sept. 2, 1858.

‖ Diday (quoted by Mauriac, *l. c.*).

△ "Traité des angines," pp. 110–112.

◊ "Sur l'angine syphilitique" (cited by Mauriac).

⇓ Gilbert, "Bull. de l'acad. de méd.," 1851, tom. xvii, p. 156.

⇕ *Vide* "Revue méd.," 1861, tom. i, p. 157, Jeltzinzki.

⇞ Jeltzinzki, *l. c.*, "Sur la cure radicale de la syphilis par la vaccination."

§ Sabatier, "Propositions sur l'érysipèle considéré principalement comme moyen curatif dans les mal. cutanées," etc., Thèse de Paris, 1831.

¶ Jeltzinzki, *l. c.*

** Garrigue, "De l'influence des mal. aig. sur les diathèses," Thèse de Paris 1870.

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exanthematous fever on the ulceration in the throat with the persistence of the latter during the acute pulmonary affection.

This remarkable influence of the febrile state upon syphilitic inflammation and ulceration of the nasal passages and throat is also, in a measure, true of simple inflammatory conditions of these cavities. It were foreign to the purpose of the present article to elaborate this latter and cognate subject, and I shall therefore simply offer for your consideration the fact that *simple catarrhal inflammation of these regions occasionally disappears completely, and is permanently cured during the course of an acute febrile disease.* Whether this occur as a phenomenon of so-called "substitution," or as the result of a profound impression made upon the nutrition of the parts by virtue of which abnormal secretion is arrested and the inflamed tract placed in a condition favorable to resolution, can only be determined by the accumulation of more exact scientific data concerning the reciprocal antagonism of pathological processes.

Without, then, attempting any special explanation or generalization, I present the foregoing observations from my clinical experience as a contribution to the study of an interesting but imperfectly understood subject.

Discussion.

Dr. J. H. Hartman, of Baltimore.—I have seen a case of congenital syphilis, in a child four years old, in the course of which an attack of measles supervened, which aggravated the ulceration in the naso-pharynx. The child recovered from the attack of measles, but the throat was left in worse condition than before. True, this was only one case; still, it goes to show that such cases are not always benefited or controlled by an attack of one of the exanthemata, as Dr. Mackenzie has stated.

Dr. F. Donaldson, of Baltimore, said he had understood Dr. Mackenzie to question the existence of scrofulous ulceration of the throat in young children, not connected with congenital syphilis. He related a case, now under his care, that of a child five years old, the son of a healthy farmer, who had, with a large ulcer of a scrofulous character over the soft palate, unmistakable evidence of scrofula, such as enlargement of the lymphatic glands, etc., and none of the symptoms usually associated with congenital syphilis.

Dr. F. I. Knight.—My experience regarding these cases, while limited, has caused me to feel very much as Dr. Mackenzie does, namely, that a careful search for the origin will reveal a history or evidence of syphilis, and, if not of syphilis, of tubercle. We can not always get a history of syphilis, nor can we always do so in the adult presenting certain symp-

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toms, but antisyphilitic treatment gives results which justify us in considering this the nature of the disease.

The PRESIDENT.—After seeing a large number of cases of the character referred to in the paper, in dispensary practice, my conviction is a growing one that, so far as the mucous membrane of the air-passages is concerned, there is no difference between congenital syphilitic and scrofulous ulceration. I formerly made a distinction, recognizing the action of two constitutional tendencies in the production of such affections, but now make no distinction between scrofulous ulceration of the fauces and ulceration of the same parts from syphilis. I should have been glad had Dr. Mackenzie gone a little more fully into the question of treatment. I am so far convinced of the identity of the two conditions that of late years I have depended almost entirely upon the administration of mercurials, and in many cases the result has been eminently satisfactory and such as to strengthen the idea of the identity of the two diseases.

Dr. MACKENZIE closed the discussion, and said: I especially avoided generalizations in my paper, and only stated that, in my experience in this class of cases, the ulceration was often cured by an intercurrent disease. I further stated that this remark did not apply to malignant epidemic influence, or so-called syphilitic cachexia. In Dr. Donaldson's case, I should like to ask how a diagnosis was to be made between syphilis and scrofula. Dr. Knight has pointed out the difficulty of arriving at the historical facts, and we must therefore rely upon our powers of physical diagnosis. With regard to treatment, I generally give mercurials and the iodide of potassium, and apply iodoform locally. If the ulcers heal while the patient is taking cod-liver oil, it is not evidence that the cause was scrofula and not syphilis, for cod-liver oil may act as a tonic in various conditions.

At the close of the morning session the President appointed committees as follows:

Auditing Committee: Drs. Hooper and Mackenzie.

Nominating Committee: Drs. Knight, Lefferts, and J. Solis-Cohen.

The Secretary stated that, owing to the resignation of Dr. Harrison Allen from the Council, there would be an extra vacancy upon the Council for Dr. Allen's unexpired term of one year.

Ballot upon the nominations for active Fellowship made by the Council, as follows, was then taken:

I. Solomon Solis-Cohen, M. D., Philadelphia, Pa., proposed by Drs. J. Solis-Cohen and Louis Elsberg. Thesis, "A case of Ankylosis of the Left Crico-arytenoid Articulation."

II. Clarence C. Rice, M. D., New York city, proposed by Drs. Louis Elsberg and R. P. Lincoln. Thesis, "The Diagnostic Value of Pathological Appearances."

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Both candidates were declared unanimously elected.
At one o'clock the meeting adjourned.

Afternoon Session.

Paper.

RETRO-PHARYNGEAL ABSCESS.

By JOHN O. ROE, M. D.

THROUGHOUT the body, organs which require a large amount of motion upon each other in the performance of their respective functions are connected by, and the space between them is filled with, loose areolar connective tissue. It is this space that affords the most favorable location for the formation of abscess, the deposit or the collection of the products of broken-down degenerate tissue.

The causes determining the location of abscess in these spaces are:

1. The low degree of vitality of this tissue and the readiness with which it breaks down when attacked by disease.

2. The looseness of this tissue and the ease with which it can be pushed aside or displaced by the accumulations of inflammatory products originating in neighboring parts.

The space behind the pharynx and in front of the vertebral column, which Henke* designates the "retro-visceral spaces of the neck," is filled with a layer of this loose connective tissue to facilitate the movements of the pharynx over the spinal column, necessitated in the act of deglutition, and it is the accumulation of purulent material in this space which we denominate from its location retro-pharyngeal or post-pharyngeal abscess, or, according to König,† "retro-visceral abscess of the neck."

Post-pharyngeal or retro-pharyngeal abscesses are divided into two main classes: 1. Those that originate in the soft parts; and, 2. Those that originate in disease of the spinal column; or they may be divided, according to König,‡ into acute idiopathic and chronic symptomatic.

* These visceral spaces of the neck are admirably illustrated by Henke in his "Beiträge zur Anatomie des Menschen mit Beziehung auf Bewegung," 1 Heft, S. 12–14, the drawings for which were made from sections of frozen bodies, the visceral spaces of the neck having been previously injected with glue.

† Pitha u. Billroth, "Chirurgie," Bd. iii, 1 Abth., 4 Liefg., S. 8.

‡ *Op. cit.*, S. 11.

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According to their clinical manifestation or causation, they can be again divided into—

1. Idiopathic.
2. Secondary from burrowing of pus from abscess in the neck.
3. Secondary from burrowing of pus from cervical spondylitis.
4. From phlegmonous inflammation following measles, scarlet fever, diphtheria, tonsillitis, etc.
5. Metastatic in septicæmia and following local inflammation or the formation of pus in other parts of the body.
6. Traumatic.*

The views formerly entertained by writers as to the ætiology of idiopathic retro-pharyngeal abscess in children have been greatly modified by the more recent and minute study of the glandular structures of this region.

Some writers, as Barmhuger,† Vogel,‡ and Niemeyer,# believe with Dupuytren‖ that abscesses in the posterior portion of the pharynx are nearly always symptomatic of caries of the basilar apophysis of the occipital or of the transverse apophysis or body of the upper cervical vertebræ. And Steiner△ also says that retro-pharyngeal abscess is rarely idiopathic or caused by suppuration of the retro-pharyngeal glands, but is more frequently due to caries of the vertebræ.

Bókai,◊ who has given this subject more careful and elaborate study than any other observer, considered, in his first article, that they mainly arose from a phlegmonous inflammation of the connective tissue, but, since Roustan⇕ and Gautier↕ pointed out the connection between lymphadenitis and retro-pharyngeal abscess, Bókai's later investigations and observations have shown him that the idiopathic form is due to suppuration of the post-pharyngeal glands.

* This division is mainly that made by Bókai, and formulated by him from his large number of clinical observations.

† "Krank. der chylopoet. Systems," 1855.

‡ "Diseases of Children," Am. ed. from 4th German, 1869, p. 121.

"Text-book of Practical Medicine," Am. ed. from 8th German, 1870, p. 458.

‖ "Gazette des hôpitaux," Paris, 1851, tome v, p. 374.

△ "Compendium der Kinderkrankheiten," 1872, p. 250.

◊ "Ueber Retropharyngealabscess bei Kindern," "Jahrbuch für Kinderheilkunde," Wien, 1857–'58, Bd. i, S. 183.

⇕ "Des abcès rétropharyngiens et de l'adénite suppurée rétropharyngienne chez les enfants." Thèse, Paris, 1869, p. 14.

↕ "Des abcès rétropharyngiens idiopathiques ou de l'angine phlegmoneuse." Genève et Bâle, 1869, p. 20.

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This view has since been confirmed by Schmitz,* Justi,† Albert,‡ and most other recent observers.

The relation between idiopathic retro-pharyngeal abscess and retro-pharyngeal lymphadenitis is readily shown by the study of the glandular structure of this region. These glands are the compound follicular and the racemose. The former are quite numerous beneath the mucous membrane throughout the pharynx, while the latter are located mostly in the upper part, forming a thick layer across the back part of the fauces between the two Eustachian tubes (Gray).

In addition to these glands, Heiberg-Hjalmar, of Christiania,# describes another open system of canals, from which, however, the lymphatic vessels can not be injected.

The lymphatic glands of this region are described by Edward Simon‖ as communicating with vessels which run in a sort of furrow between the forward end of the Eustachian tubes and the rear end of the turbinated bones. Here they form a small network from which two or three trunks of about one millimetre in diameter arise.

These run obliquely backward and outward, one of them terminating in a gland in front of the vertebræ.

These glands are located one on each side of the median line between the constrictor pharyngeus superior and the aponeurosis of the pre-vertebral muscles. Occasionally an additional gland is found.

The vasa afferentia of these glands arise in three or four main trunks from the mucous membrane of the upper and lateral surfaces of the pharynx, and from the upper surface of the soft palate.

The vasa efferentia pass into the glands situated to the outer side of and somewhat below the tonsils, where they meet the large number of the lymphatics of the tongue.△ In case only one gland exists, it is generally found to the right side. After the third year of life they generally disappear altogether.

The connection between idiopathic retro-pharyngeal abscess and retro-pharyngeal lymphadenitis is demonstrated very clearly by the complete records so carefully kept by Bókai of all the cases of retro-

* "Jahrbuch für Kinderheilkunde," Leipzig, 1872–'73, Bd. vi, S. 283.

† "Deutsch. med. Wochenschr.," Berlin, 1877, Bd. iii, S. 294.

‡ Albert's "Chirurgie," Bd. i, S. 354.

\# "Jahresbericht," 1872, i, S. 45.

‖ Schmidt's "Jahrb.," 107 B., S. 161.

△ "Jahrbuch f. Kinderh.," n. F., 1872–'73, vi, S. 283.

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pharyngeal abscess and retro-pharyngeal lymphadenitis occurring in the Children's Hospital at Pesth during the twenty-six years from 1854 to 1880.

During this period there occurred 204 cases, 179 of which were of the idiopathic form; 7 were secondary to burrowing of pus from abscesses in the neck, 7 secondary to caries of the cervical vertebræ, 9 to scarlet fever, 1 to measles, 1 traumatic.

During this period there occurred 63 cases of retro-pharyngeal lymphadenitis which did not terminate in abscess. The connection between the location of the abscess and the normal location of these glands is also quite significant.

Of these 204 cases, 85 occurred on the right side, 78 occurred on the left side, 37 occurred in the middle, and in 4 the location not stated.

During the same period there were observed 63 cases of retro-pharyngeal lymphadenitis that did not terminate in suppuration. Of these, there were: On the right side, 33; on the left side, 21; in the middle, 4; location not stated, 5.

It is also to be seen from the table that these 267 cases, including the 63 cases of retro-pharyngeal lymphadenitis, occurred in 147,879 patients that were treated during the period from 1854 to 1880, indicating that the affection is by no means of frequent occurrence.

As will also be seen from the tables, the period of the greatest frequency, or almost exclusive occurrence, is during the first two years of life, and after three years of life, when these glands normally disappear, the idiopathic form is seldom seen.

Thus, of the 204 cases, 196 occurred during this period.

Another fact which points to the lymphatic glands as the seat of idiopathic retro-pharyngeal abscess is the slow development of the abscess and its circumscribed condition. Phlegmonous inflammation of the connective tissue, and especially of the loose tissue found in the retro-pharyngeal space, runs a rapid course and ends in a few days in suppuration, whereas acute lymphadenitis runs its course slowly, and, as Schmitz* observes, spreads rapidly only after the enveloping membrane of the gland has become perforated.

ÆTIOLOGY.—All constitutional diseases that predispose to inflammation of the lymphatic glands in general play an important part in the production of retro-pharyngeal abscess. Of these, scrofula and hereditary syphilis stand at the head.

Scrofula is by far the most frequent cause of glandular enlarge-

* *Loc. cit.*

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ments, although many cases of syphilis in adults, as well as in children, are overlooked, their results being classed under the general and quite satisfying term scrofula.

Bókai * reports two cases in children directly caused by syphilis.

Cases are reported in adults the direct result of acquired syphilis. Thus, Edward Martin † reports a case in a man, forty-four years old, the result of syphilis contracted eighteen years before. Tertiary symptoms appeared, with swelling of the lymphatic glands of the neck on the right side, associated with suppuration of the middle ear and mastoid cells. The abscess occurred on the right side of the pharynx. After it was opened, pus could be squeezed out by pressure on the mastoid region. The patient recovered.

The most frequent exciting cause is exposure to sudden changes of temperature and the taking of colds, giving rise to attacks of rhinitis and inflammations about the fauces.

In this connection, the period of the year in which retro-pharyngeal abscess most frequently occurs is quite significant.

From Bókai's tables it is seen that it is most prevalent during the months of November, December, January, February, March, April, and May—months during which colds are also most prevalent.

There can be little doubt of the connection between chronic rhinitis in children and retro-pharyngeal abscess, for it is a well-known fact that enlargement of the lymphatic glands of the neck is almost always found in children suffering from snuffles, and the formation of abscess in lymphatic glands from the absorption of septic material into the lymphatic vessels is a very common occurrence.

Fraenkel ‡ says: "It is not very uncommon for swelling of the glands to outlast the catarrh which caused it, and then it may remain as an independent affection, subject to further changes."

It is now believed that retro-pharyngeal abscess following scarlet fever, measles, erysipelas, and other affections attended with inflammations about the naso-pharyngeal cavity in children, is of the same nature as the idiopathic form, and is the result of disease set up in the glands from lymphatic absorption rather than from the formation of pus in the connective tissue as the direct result of the phlegmon.

In support of this view, Lewandowsky # says: "The presumption

* *Loc. cit.* † "Revue médicale de la Suisse Rom.," i, 1881, p. 622.

‡ Von Ziemssen's "Cyclopædia," vol. iv, p. 127.

\# "Retropharyngealabscess und Scharlach," "Berliner klin. Wochenschr.," No. 8, Feb. 20, 1882, S. 116.

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that these abscesses have really nothing to do with scarlatina, but are only accidental complications, may be rejected, leaving aside all other reasons, for the reason that the views entertained as to the pathogenesis of these abscesses also give a ready explanation of just why they should occur in scarlatina."

Of two cases of retro-pharyngeal abscess reported by Lewandowsky occurring after scarlet fever, in children aged seven and twelve months, he says: "While both cases in their general character were of a favorable nature, there existed a *violent inflammatory condition of the nose*, upon which I lay special stress as a cause of the retro-pharyngeal abscess. . . . To explain the retro-pharyngeal lymphadenitis by the angina does not appear to me admissible, because in both cases it was exceedingly mild."

Bókai also remarks that the cases reported by him as occurring in scarlet fever did not differ from the idiopathic form.

Surely violent phlegmons of the pharynx must rarely be the cause of retro-pharyngeal abscess, for, among the many cases seen by Bókai, not one was caused by diphtheria.

Suppuration in the tympanic cavity in children is pointed out by Wiel * as a not infrequent cause of retro-pharyngeal abscess. He reports a case in a child, nine months old, that died from secondary œdema of the larynx. On post-mortem, the suppuration in the ear was shown to have been the cause of the abscess.

Wiel quotes Koths (from his article on "Pharyngeal Diseases," in Gerhard's "Handbuch"), who says: "Retro-pharyngeal abscess is also found in inflammations of the middle ear."

Wiel also quotes from Korman: "Idiopathic retro-pharyngeal abscess arises from retro-pharyngeal lymphadenitis. These glandular inflammations are found in cases of inflammation of the mucous membrane of the mouth, pharynx, and ear."

In ten cases of otitis (mostly middle-ear catarrh) Wiel found glandular swellings.

Bókai speaks of the connection between these abscesses and inflammations of the meatus, but does not seem to recognize cause and effect between them.

This relation between the two is an important observation, but is by no means the only ground on which to urge the necessity of prompt and careful attention to all cases of suppuration of the middle ear in children.

The symptomatic indications in this affection are only of value

* "Monatsschr. f. Ohrenh.," Berlin, 1881, Bd. xv, S. 43.

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to direct our attention to the seat of the affection, for, as Albert* remarks, "the main trouble is that pharyngeal abscess is not thought of, and the patient is treated for angina."

The general symptoms attending this affection—as dysphagia or aphagia, dyspnœa, dysphonia, cough, swelling of the neck externally, etc.—may resemble in many essential particulars those caused by croup, œdema of the larynx, enlarged tonsils, or a foreign body in the larynx, but a thorough examination of the throat, which should always be made in all such affections, will at once reveal the true nature of the difficulty.

The most constant symptom is difficulty in swallowing, although exceptions to this rule occasionally occur.

Pepper† reports the case of a child, thirty-two months old, who had a retro-pharyngeal abscess occurring six weeks after recovery from diphtheria.

In this case the swelling of the pharynx produced great dyspnœa, but no hindrance to swallowing.

It should be noted, however, that in those cases where the abscess is so deep seated that it can not be seen or felt, but produces dysphagia and dyspnœa by compressing the œsophagus and trachea, the voice has a peculiarly shrill tone like a duck's voice, which is of marked diagnostic significance, as Duparcque‡ has pointed out.

The position of the head is also of special significance. In all these cases there is a peculiar stiffness of the neck resembling rheumatic torticollis, the head being thrown to the unaffected side. This is so characteristic that Albert# says he rarely fails of diagnosticating retro-pharyngeal abscess on first glancing at the child.

Tenderness over the spine and a kyphotic prominence of some one of the spinous processes are important to note as indicative of caries of the vertebræ.

In the study of retro-pharyngeal abscess we see that the idiopathic form occurs in children, and nearly always when they are under two years of age, and that those cases arising from other causes are rarely seen in children under three years of age, although caries of the vertebræ arising from various causes may occur at any age.

Those originating from the burrowing of pus from neighbor-

* *Loc. cit.*

† "Philadelphia Medical Times," Sept. 25, 1875, vol. v, p. 817.

‡ Schmidt's "Jahrbücher," Bd. v, supplement, p. 191.

\# *Op. cit.*, p. 356.

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ing parts, from traumatic injury, from tonsillitis, or metastatically, occur indifferently in adults and young people.

Nélaton* says that suppuration in the region of the perinæum frequently leads to the formation of pus in distant organs, particularly in the neck.

In illustration of this metastatic origin, he reports a case of retro-pharyngeal abscess, the result of or associated with traumatic stricture which led to perineal inflammation and suppuration from extravasation of urine.

A case of retro-pharyngeal abscess following quinsy has come under my own observation.

A student, aged twenty years, was out at a late class supper, ate very heartily, and during the evening took cold. The next day he was sick with diarrhœa, headache, and severe sore throat. He grew rapidly worse, and was treated for ulcerated sore throat. The second day afterward his neck was very much swollen, mostly on the right side. He was hoarse, and spat blood from what proved to be an abscess in the tonsil that had opened spontaneously. When I first saw him, on the fourth day, the surrounding parts were much swollen, as was also the pharynx, which bulged forward on the right side. A digital examination showed this swelling to be a retro-pharyngeal abscess. I at once opened it, and much bloody, purulent matter was discharged. Soon afterward the tract of the abscess began to extend downward quite rapidly, until it had dissected down behind the cervical portion of the œsophagus and become retro-œsophageal.

The discharge from it was very copious, pus in large quantities being thrown out. At times the discharge was so profuse as to nearly suffocate him. On breathing, it sounded as if the air passed through a quantity of soap-suds. Temperature 103° F., pulse 120. Several physicians saw him with me; but, in spite of all that could be done, he continued to grow worse, the bloody and purulent discharge increased, he became rapidly weaker, and died from exhaustion and increasing suffocation on the third day after I saw him. No post-mortem, I regret to say, was permitted.

The two following cases of retro-pharyngeal abscess have also come under my observation. The first was idiopathic, and of scrofulous origin; the second followed scarlet fever; but both could be quite directly traced to nasal disease.

On the evening of February 12, 1884, by the advice of the family physician, I was requested to see a child, nine months old, who was nearly suffocated from what was thought to be diphtheritic croup. I found the child with extreme dyspnœa, evidently caused by obstruction

* "All. Wien. med. Zeitung," 1862, Bd. vii, S. 43.

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in the throat. The head was thrown to the right side, and there was a marked swelling on the left side of the neck and behind the angle of the jaw. She was unable to cry or to make a laryngeal sound; but there was entire absence of the systemic inflammatory disturbance which attends diphtheritic croup.

Upon examination of the throat, the pharyngeal wall, mainly on the right side, was seen markedly bulging forward. It had the appearance of a tumor, and filled the lower pharynx, nearly cutting off respiration. The neck on the left side, externally, was also greatly swollen from the clavicle to the ear. The swelling in the throat had the appearance of a hard tumor, but to the touch with the finger it was soft and fluctuating, indicating at once its nature.

Being fearful lest, on opening the abscess, some pus should be sucked into the larynx of the child and, in her nearly moribund condition, strangle her, I took the precaution to make a very small incision into the abscess, which allowed its contents to escape very slowly, and, by at once putting her head downward and forward, and holding it there until sufficient pus had escaped to relieve the dyspnœa, all danger was avoided.

Afterward I enlarged the incision to allow free escape of the entire contents of the sac. The child was at once relieved. She took nourishment freely, which she was unable to do at all before.

There has been no tendency to recurrence of the abscess, and the child was improved greatly in its general condition. For a few days afterward, however, she had some embarrassment to respiration, owing to obstruction of the nostrils from snuffles or a subacute catarrhal condition of the passages, from which she had been suffering for several weeks previous to the occurrence of the abscess.

The child from birth had been weak, cachectic, and scrofulous, with more or less enlargement of the cervical lymphatic glands. When three months old she had measles, from which she slowly recovered. For two months after she continued to have a succession of bullæ, or fever boils, as they were called, about the neck, arms, and back. They were of about the size of a cent, would fill with pus, and in three or four days break and dry up, new ones forming around the old ones. Sometimes the old ones would refill.

When five months old the child had summer diarrhœa, and convulsions, sometimes three or four a day.

Five weeks before I saw her, her cervical lymphatics became swollen, and she began to have a severe cough, like whooping cough. Three weeks later she began to have some dyspnœa and dysphagia, which gradually increased until I saw her.

A male child, ten months old, had scarlet fever, from which he had apparently recovered two weeks before I saw him.

The course of the fever was mild; there was no marked inflammation about the throat, but there was considerable coryza and conjunctivitis. Shortly afterward the child began to manifest difficulty in swallowing,

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which gradually increased until he was unable to swallow anything and began to have some difficulty in respiration, and his voice was very much altered.

It was now feared by the attending physician that diphtheria was about to supervene on the scarlet fever, particularly as the fauces appeared red and much swollen, and there was also marked swelling of the neck, externally, on the left side.

I was requested by the attending physician to see the patient with him.

On thorough exploration of the lower pharynx with the finger, this swelling on the left side, which could be plainly seen on inspection, was proved, by its soft, doughy, fluctuating character, to be a retro-pharyngeal abscess, although it had not before been suspected.

Incision of the abscess was at once made in the manner described in the other case, and the child was immediately relieved. He rapidly recovered, and has had no trouble since. Eighteen months have now elapsed.

Diagnosis.—An early diagnosis of this affection is of the utmost importance, for several cases are reported in which death resulted from failure to detect the abscess during life.

Dr. C. Elliott* reports a case in a child, three years old, who died apparently from exhaustion, with marked nerve irritation and spasms. On post-mortem examination, a retro-pharyngeal abscess was discovered.

A case is reported by Gyselynck,† and another by Gibney,‡ in which the abscess was only discovered after death. Cases are also reported where the abscess was not discovered until after the children had ceased breathing, but, on opening the abscess immediately and employing artificial respiration, they recovered. Such cases are reported by Smith,# Cayley,‖ and Sands.△

The two means of diagnosis on which we should solely rely in making an examination for retro-pharyngeal abscess are inspection and palpation. The former is sufficient in those cases where the swelling is located in the central portion of the pharynx, but those located high up or low down can not be seen. Thus, in the case referred to, reported by Elliott,◊ repeated inspections of the throat were made, but the abscess, which was found on post-mortem examination located high up, was undetected. Also, in the one reported

* "British Med. Jour.," May 3, 1879, p. 663.

† "Archives médicales belges," 1881, third series, vol. xx, p. 116.

‡ "New York Med. Jour.," vol. xxii, 1875, p. 626.

\# "Brit. Med. Jour.," May 17, 1879, p. 736.

‖ "Indian Med. Gazette," Calcutta, vol. xiv, Aug. 1, 1879, p. 232.

△ "Medical Record," N. Y., vol. xxii, 1882, p. 106.

◊ "Brit. Med. Jour.," *loc. cit.*

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by Gibney,* the abscess was so low down that it could not be seen during life.

Inspection of the pharynx in young children is in many instances no easy task. In the case of a struggling child with its narrow pharynx, which is usually filled with mucus, and often with eructations of milk caused by the gagging induced by the presence of the tongue depressor, the examination is generally very unsatisfactory in its results.

Palpation with the finger is, therefore, not only indispensable in diagnosticating retro-pharyngeal abscess, but is, in fact, the *only reliable* means of arriving at a correct diagnosis.

In those cases where a swelling is suspected but can not be seen, the finger is indispensable to discover its location; and, when it can be seen, the finger is also indispensable to determine its true nature —whether it is fluctuating and contains pus, or whether it is an aneurysmal tumor palpitating synchronously with the heart; and to differentiate an abscess from fibrous, osseous, or other tumors which may occupy the pharynx.

On suspecting an abscess that can not be seen, the vault as well as the lowest portion of the pharynx should be thoroughly explored with the finger. To facilitate a more thorough examination of the fauces, especially in obscure cases, Giraldès † has recommended the employment of chloroform, a procedure which Schmitz ‡ condemns. He says: "Never would I think of chloroforming a child for the purpose of making a thorough examination, as recommended by Giraldès."

Bókai, in describing his method of making a thorough examination, and, in cases of diphtheria, of protecting his finger by keeping the child's jaws apart with Ulrich's oral speculum, or, in its absence, a spoon-handle or piece of wood wrapped with cloth, says: "I have never failed in making an examination, nor has it ever entered my mind to follow Giraldès's peculiar advice to use chloroform. I hope," he says, "that this advice will also not be followed by others."

Pauly,# on the contrary, says that he does not agree with Schmitz and Bókai as to the danger of the use of chloroform, for the reasons that,

* "New York Med. Jour.," *loc. cit.*

† "Leçons cliniques sur les maladies chirurgicales des enfants," Paris, 1869, p. 361.

‡ *Op. cit.*

\# "Berlin. klin. Woch.," xiv, 1877, p. 311.

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1. The danger of suffocation is not increased by the use of chloroform, as illustrated in operations of tracheotomy for croup.

2. The exploration can be made more thoroughly, and the operation can be done by inverting the child while under chloroform, or hanging it down over the edge of the table, as proposed by Rose and Wolff.

Judging from the relief which I have seen chloroform give in cases of laryngeal obstruction from different causes, I am inclined to agree with Pauly that the use of chloroform is advisable in obscure cases where a thorough exploration is necessary, and for the purpose of quieting an ugly child to facilitate the operation of opening the abscess. As so little chloroform is required, the only real danger is in the escape of pus into the larynx, which can be readily prevented by depressing the head.

Complications.—Among the dangers that may arise to complicate this affection and to threaten the life of the patient, the principal one to be guarded against is suffocation, either from rupture of the abscess and the sucking of pus into the larynx, from closure of the larynx by the direct pressure of the swelling, or from secondary œdema of the glottis.

Rupture of the abscess spontaneously in a child during sleep is almost invariably fatal from suffocation.

Justi * refers to several such cases of suffocation in bed from rupture of the abscess, reported by Oppolzer in his lectures edited by Stoffella.

In other instances of spontaneous rupture of the abscess the quantity of pus may be so great as to suffocate the patient, as in the case reported by Gaupp.†

Œdema of the glottis is by no means of infrequent occurrence in fatal cases of retro-pharyngeal abscess, as the result of burrowing of pus into the ary-epiglottic folds. Schmitz ‡ reports the occurrence in a child six months old. Laryngeal œdema in adults is also a frequent and serious occurrence in cases of retro-pharyngeal abscess, and also as accompanying abscesses occurring in the other visceral spaces of the neck.

Dr. Lidell # has, in his very excellent article, collected from vari-

* *Op. cit.*

† "Würtemb. Corr.-Bl.," xi, 1870, No. 23. Cited by Mackenzie, "Dis. of the Throat and Nose," Lond., 1880, vol. i, p. 21.

‡ *Op. cit.*

\# "On certain Abscesses of the Neck which may cause Sudden Death," etc., "Am. Jour. of the Med. Sciences," Oct., 1883, p. 321.

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ous sources ten different cases of abscess in the cervical region in adults, three of which were retro-pharyngeal.

One is reported by Dr. Levestin,* occurring in a peasant aged forty-six. The abscess followed typhus and gastric fever. Dyspnœa became urgent, and tracheotomy was performed, notwithstanding which he died two days later from asphyxia. The autopsy revealed an abscess behind the lower portion of the pharynx.

Convulsions are a complication that frequently arises, as seen in the cases reported by Elliott, Bókai, and Schmitz.

Bókai has also observed facial paralysis in four cases.

Death from hæmorrhage, from opening of the carotid or its branches after the opening of the abscess, seems to be a not very infrequent complication.

Dr. Carmichael † reports a case of a child, five weeks old, in which pharyngeal abscess was diagnosticated but not opened. Next day the child died suddenly from hæmorrhage from rupture of both the abscess and the carotid. A post-mortem showed the abscess to be the cause of the softening of the coats of the artery.

Similar cases are also reported. Thus,

Gautier ‡ reports two cases of sudden death from hæmorrhage.

Bókai # reports a case of a child, four years old, that died from the abscess opening the carotid.

Lidell cites the case of a young man, ‖ aged fifteen years, who had a swelling in the back of his throat and the sides of his neck, which was not opened. Sixteen days afterward hæmorrhage occurred from his mouth and nose, and two days later an abscess opened spontaneously in his throat. On the second and fourth day after there was more hæmorrhage. During the fourth week the abscess burst a second time, and the patient soon died suddenly from hæmorrhage. The post-mortem showed caries of the anterior surface of the body of the atlas, and an abscess cavity located between the right tonsil and parotid gland, involving branches of the carotid.

In this case it was considered that the caries was the cause of the abscess, but to my mind it was just as certainly the result of the

* "Hygiea," Bd. xxi, p. 692. New Sydenham Soc. "Year-Book," 1861, pp. 248, 249.

† "Transactions of the Edinburgh Obstetrical Society," vol. vi, 1880–'81, p. 132.

‡ "Des abcès rétro-pharyng.," etc., *loc. cit.*, p. 138.

"Jahrbuch für Kinderh.," *loc. cit.*

‖ Reported in "Würtemb. Corresp.-Blatt," xiv, 1858. Holmes's "System of Surgery," 2d ed., vol. i, p. 133.

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erosive action of the pent-up pus as the giving way of the arterial vessels was. In fact, I am quite of the opinion that, in some of the cases where disease of the vertebræ is found in connection with an abscess that has remained unopened for any considerable length of time, either in adults or children, the disease of the vertebræ is much more likely to be the result rather than the cause of the abscess, as is the case with the giving way of the resisting coats of the arteries.

Dr. Cohen* cites a case reported by Reeves† which clearly confirms this statement. At the time of death an abscess was in the course of production. Examination showed the periosteum and common anterior ligament gone in parts, and the bone exposed and eroded in patches—evidently the result of the pressure of the abscess, inasmuch as the bones were not carious and the joints were intact.

TREATMENT.—In all cases where pus can be detected it should be immediately evacuated. From a study of fatal cases of retro-pharyngeal abscess, it is seen that in the majority of them death resulted either from failure to suspect the abscess and seek for it, or from failure to find the abscess when suspected, as is shown in several cases cited; or from failure to open the abscess promptly when detected, thereby preventing the occurrence of suffocation; or from the burrowing of the pus into the deeper tissues, which may occasion the softening or ulceration of the coats of important blood-vessels and other tissues.

From this failure to timely detect and to open the abscess unquestionably many lives of children, and of adults also, have been sacrificed that might have been saved. Henoch‡ cites a case in which a colleague, who wished to keep the patient in question until the next day for clinical demonstration, paid for the delay by the sudden death of the child during the night from suffocation.

The method of opening the abscess and the location of the incision depend on the seat of the abscess. If it points or is found bulging into the pharynx, a free incision into its most dependent portion is necessary only. If there is marked swelling of the side of the neck, with the formation of pus, external incision is often also necessary. In sixteen cases reported by Schmitz, three were opened

* "Diseases of the Throat and Nasal Passages," Philadelphia, 1879, 2d ed., p. 242.

† "Brit. and For. Med.-Chir. Rev.," Oct., 1873, p. 507.

‡ "Diseases of Children," Eng. trans., New York, 1882, p. 60.

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externally and five both externally and internally Bókai reports two cases that were opened both externally and internally.

Various methods have been from time to time proposed for opening the abscess, as the trocar and cannula, the aspirator, the guarded bistoury, and the finger-nail. The use of the aspirator and trocar was suggested to prevent the escape of pus into the larynx. Care should, however, be exercised in their use lest injury be done the vertebræ.

Albert * adopts the plan of making a very small incision at first, to allow the pus to escape slowly and not suffocate the child, and afterward enlarges the incision.

Justi employs a retro-pharyngotome of his own device, which is figured in his article.

Schmitz has devised a knife with a concealed blade which can be thrown out when it is *in situ* against the wall of the abscess. By it danger of wounding other parts is avoided when the child persists in struggling. Before devising this knife, Schmitz on one occasion attempted to open an abscess with a bistoury, when the tongue of the child slipped from under his finger and the knife was plunged into the tongue. Hæmorrhage was so copious that the blood was sucked into the larynx and the child became asphyxiated. It was, however, resuscitated by introducing a female catheter into the larynx and employing artificial respiration.

In opening deep-seated abscesses, Steffen † recommends counter-pressure on the corresponding side of the neck with one hand while the index-finger of the other is passed in deeply behind the larynx.

Chiene has proposed that in every case of retro-pharyngeal abscess the opening be made externally, and (although Dr. George McClellan,‡ of Philadelphia, had used antiseptic dressings prior to 1848 in the treatment of cervical abscesses after they had been opened) he is the first to propose that the opening be done antiseptically after the method of Lister, which he describes in a communication to Duprés.#

In eleven out of seventeen cases Schmitz found a fluctuating swelling behind the angle of the lower jaw (usually on the right side), and, on opening this, a direct communication could be shown between it and the pharyngeal abscess.

This same fact is shown in some of Bókai's cases.

In some of Schmitz's cases, where both an external and an inter-

* *Loc. cit.* † "Jahrbuch f. Kinderheilkunde," 1869, S. 152.

‡ "Principles and Practice of Surgery," Philadelphia, 1878, p. 200.

\# "La chirurgie et le pansement antiseptique," Paris, 1819, p. 242.

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nal incision were made, fluids and a probe could be passed from one opening to the other.

This clinical fact corresponds entirely with the known anatomical connection between the retro-visceral and lateral visceral spaces of the neck, and would render it eminently advisable to open the abscess externally in all cases where it tends to point externally, and where the pus tends to burrow and the deeper structures threaten to become involved.

This is advisable because—

1. Thorough drainage can be maintained and no secondary operations are required.

2. The pharyngeal wound is avoided in which foreign and irritating substances can lodge or sacs or pockets form, which has been complained of by some authors.

3. In cases of necrosis of the vertebræ, the opening of the abscess antiseptically and the use of antiseptic cleansing injections give the patient the best chance for recovery. In some cases, however, it is advisable to make both an internal and an external incision for the purpose of thorough drainage where the drainage by the external incision alone is insufficient.

Chiene reports a case of caries of the cervical vertebræ which he cured by adopting this antiseptic method.

In opening the abscess externally, the incision should be made along the posterior border of the sterno-cleido-mastoid to avoid the large vessels.

The cut is usually made with a knife, but those who have employed the director and dressing-forceps, as recommended by Hilton, in opening deep abscesses where important vessels are in danger of being wounded, will never attempt it by any other method. Those who have never adopted it should not fail to read Hilton * on the subject.

Hilton's method of opening deep abscesses about the neck and elsewhere is as follows: An incision is first made through the skin. Then a blunt-pointed grooved director is pushed into the swelling down to the pus. Then a pair of small dressing-forceps, with the blades closed, is forced along the groove down to the abscess, and, by partly opening the blades on withdrawing the forceps, a free opening is made.

Hilton reports a case of retro-pharyngeal abscess which he opened externally, and which he considered unsafe to open in any other

* Hilton, "Rest and Pain," New York, 1879, pp. 74 *et seq.*

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manner. In this case there was caries of the cervical vertebræ which resulted in complete recovery.

In all cases more or less attention should be given to the general constitutional condition.

In adults the treatment required will depend on the cause. or the disease of which the pharyngeal abscess is a complication.

In children there is usually added a scrofulous dyscrasia, which should be removed by appropriate anti-strumous remedies, and all known means at command should be employed to promote the invigoration of the child.

Discussion.

Dr. De Blois.—I have been very much interested in Dr. Roe's paper, embodying as it does the results of much laborious research, particularly as I myself have had three cases, one of which was in an adult and the two others in children. In one of them the incision had to be carried through the posterior pillar of the fauces. I differ with Dr. Roe as to making the incision a small one, and believe that it should be free and the pus be evacuated at once, but that after the incision the head should be forced down. If the patient is a child, it should be turned upside down. I think the position in which the head is carried—that is, very far backward—should be taken into account.

Dr. Johnston wished to call special attention to the horizontal incision and inversion of the patient—that appearing to be the most satisfactory method of evacuating the abscess.

Dr. Jarvis.—I think more stress should be laid upon the occasional occurrence of retro-pharyngeal abscess in connection with ordinary tonsillitis. A case of this kind has come under my observation in which the condition existed, along with acute suppuration of the tonsil, resulting in strangulation of the patient.

Dr. Lefferts.—The paper of my friend illustrates very well the relative value of theory and practice; its bibliographical research is large, but too speculative and theoretical in its results; no practical deduction can be drawn from it. His clinical cases, on the other hand, are plain and to the point. He tells what he has seen and done. One clinical fact well observed is worth pages of theory. Take, first, the matter of causation. Who in this audience of experts believes that nasal catarrh in children is ever a cause of retro-pharyngeal abscess? If it is so, why do we not see the latter oftener? Who believes that tuberculosis of the pharynx is ever a reason? Tuberculosis of the pharynx is the rarest of diseases; some deny that it ever occurs. Who has ever seen an injury to the posterior pharyngeal wall followed by abscess? And yet all these causes have been given us in good faith. Retro-pharyngeal abscess, aside from that form arising from caries of the cervical vertebræ, which must be rare, is probably due to a simple phlegmonous inflammation of the

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cellular tissues in front of the spinal column, arising from causes which produce similar abscesses elsewhere, and the reason of these is not always demonstrable. Take the matter of diagnosis. It seems to me that there is little value in speculating whether the patient's head is held forward or backward, whether inspiration or expiration is most affected, and the like variety, of symptoms that have been given us. One look into the patient's throat is enough. Few conditions can be confounded with retro-pharyngeal abscess; a suppurating gumma is one. In treatment, again, why not sum the matter up in one word, by saying that a retro-pharyngeal abscess must be treated upon the same surgical principles as an abscess elsewhere in the body—open it and discharge its contents? I care not if the incision be transverse, or if it be made from below upward, or from above downward—all of which matters have been dwelt upon.

Retro-pharyngeal abscess must be rare. In literature how comparatively few examples are met with in comparison with all the cases detailed! Personally, I have seen but two examples, both in young children; both patients were operated upon by simple incision; there was no difficulty in the diagnosis; and both recovered.

Dr. Cohen remarked that the danger of suffocating the patient on incision of the abscess might be avoided by operating with the head pendent. As to the horizontal incision, recommended by one of the speakers, he believed that the danger of leaving a pocket in the lower portion of the abscess, in which pus might accumulate, had been mentioned by some authors as a reason for preferring the vertical incision.

Dr. Donaldson stated that he had had but one case of retro-pharyngeal abscess, in a child three years of age. The tumor was so large as to fill up the naso-pharynx and extend down into the lower pharynx, pressing upon the epiglottis and thus causing considerable dyspnœa. Fluctuation was evident, and the diagnosis was easily made. In view of the danger of the pus flowing into the larynx from an incision with a bistoury, he selected a point situated high up, where the wall of the abscess was not very thin, and, introducing a fine aspirator-needle, drew off about an ounce of pus. After this he made a free incision, and the child was completely relieved. He thought the aspirator the best and safest means for emptying retro-pharyngeal abscesses.

Dr. George W. Major stated that his experience of retro-pharyngeal abscess corresponded in the main with that of the fellows who had already spoken. There occurred to him at the moment three cases having a bearing on the present subject—two cases of abscess proper, and one that had been referred to as an abscess. The first case occurred in a child, aged four years, as a sequel of measles. The difficulty of breathing and swallowing was very great indeed, but was immediately relieved on incision and evacuation of the pus. The second case followed after cerebro-spinal meningitis. Swallowing, even of liquids, was almost impossible, and breathing dangerously embarrassed. On making

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an opening, immediate relief followed. The third case had been referred to him as one of abscess by an ophthalmic surgeon, whose clinic the patient was attending for a neuralgia and prominence of the left eye, from which no relief was had. Although palpation did not detect the presence of pus, and an exploratory incision revealed a growth evidently malignant, eighteen months subsequently, at the post-mortem, a large sarcoma was found to have caused absorption of a large portion of the base of the skull, and to have been pressing on the brain. The last case was referred to as showing the possibility of making an error in diagnosis in such cases.

Dr. LINCOLN.—To illustrate the fact that other operative interference than a simple incision in the posterior wall of the pharynx is sometimes necessary in order to get rid of the contents of these abscesses, I will refer to a case I was once summoned to see, in which the patient, a child three years old, was supposed to be dying. It had been under the care of a homœopathic physician, who had failed to recognize the true nature of the disease. The prominence of the abscess not only filled the back of the mouth, so as to stretch the soft palate, but caused a bulging on each side of the neck, under the angle of the jaw. On incising the abscess in the pharynx, this part immediately collapsed, affording prompt relief from the threatened suffocation; but there was no perceptible change in the size of the swellings in the neck, although they seemed to be less tense. By introducing an aspirator-needle into each, they were readily evacuated, but on the left side it was necessary to repeat the operation twice.

Dr. MACKENZIE called attention to the possibility of confounding a gummy syphilitic tumor of the posterior pharyngeal wall with a retro-pharyngeal abscess, and related a case referred to him in which the mistake had been made by a brother practitioner.

Dr. E. FLETCHER INGALS was surprised that in the experience of others retro-pharyngeal abscess was so rare, though it had been rare in his own experience, which embraced but two cases. One of the patients was a child, about ten months of age, who had an abscess mostly above the palate, which had opened a few hours before he saw it. It was supposed to be due to the youthful indiscretion of its father. The second case was in a man, about fifty years of age, who came to him because of laryngeal trouble. The day he presented himself he had coughed out what had the appearance of being about one half of the ossified cricoid cartilage, the site of which was clearly seen upon laryngoscopic examination. About three weeks later a retro-pharyngeal abscess was developed, which progressed slowly, and finally opened spontaneously. About four weeks afterward he had been called to see the patient for symptoms which appeared to be those of cerebral disease. Owing to other engagements, he did not see the patient, but saw by the papers a day or two afterward that he had died of some cerebral disease. The cause of the

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retro-pharyngeal abscess seemed to have been the same as that of the meningitis which finally caused the man's death.

Dr. CHAMBERLAIN.—Two cases of retro-pharyngeal abscess have been under my observation. The first was during an epidemic of cerebro-spinal meningitis in Hartford, occurring in a child of about eight years. The abscess was situated behind the palate, and followed the usual course, healing after incision. The second case was apparently unique; at least I have seen no similar case recorded. The abscess was situated posteriorly to the left tonsil. As the case occurred in the country, its importance was not at first recognized. When urgent symptoms set in, I was sent for, but arrived too late. When the abscess opened spontaneously, very profuse hæmorrhage followed, and death ensued almost immediately. Post-mortem examination showed that the cause of death was rupture of the internal carotid artery, from weakening of its walls by the abscess. It was extremely probable that the child had inherited some taint from the father, whose habits before marriage had not been above suspicion.

Dr. ROE, in closing the discussion, said, in reply to Dr. Lefferts, that his only object in dealing with the theoretical points had been to direct attention to the conditions which might cause post-pharyngeal abscess, when the indications regarding diagnosis and treatment would be plain. But in many cases the symptoms were so obscure that, unless we took into consideration all the possible conditions, the true one might be overlooked. With regard to the rare complications, for instance that of necrosis of the vertebræ, he believed they might be avoided by early recognizing the disease and resorting to proper treatment. As to the occurrence of retro-pharyngeal abscess in children as a result of nasal catarrh, he coincided with the views of Broca, Jacobi, and others, that in many of the cases of post-pharyngeal abscess following diphtheria, scarlet fever, etc., in children, the patients suffered from the "snuffles," and the relation of the lymphatic channels in the region of the naso-pharynx to those in the pharynx proper was such as to justify the opinion that inflammation affecting the former had led to inflammation and ulceration of the latter.

Paper.

A CASE OF CONGENITAL WEB OF THE VOCAL BANDS.

BY THOMAS AMORY DE BLOIS, M. D., BOSTON.

THE following case of congenital web occurred in the dispensary practice of my colleague, Dr. J. W. Farlow, of Boston:

Louisa T., a young girl of twenty, came to the Boston Dispensary during the summer of 1883 for treatment for her throat. Her voice was exceedingly weak, hoarse, and puerile, and, although generally well developed, she stated that it had always been so; that in infancy her shrill,

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peculiar cry had been often remarked, but that no one was aware of the cause, nor had any laryngeal examination ever been made.

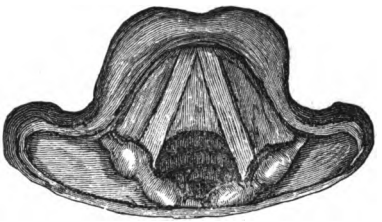

FIG. 1.—THE LARYNX BEFORE OPERATION, SHOWING THE CONGENITAL WEB.

Upon examination of the larynx, a very dependent epiglottis was seen, and it was only with the greatest difficulty that the patient was able to raise it sufficiently to allow the operator to see behind and under it. When this, however, was finally accomplished, it was seen that the anterior half of each vocal band was spanned across by a white and almost transparent web, perfectly symmetrical in all its aspects.

This membrane appeared to be elastic, and to expand and contract perfectly in unison with the motion of the vocal bands. The education of the patient was immediately commenced, for she was so intolerant that it was impossible to introduce any instrument into the larynx. This was continued during the month of August, by the end of which time she became much more tolerant.

About the 1st of September, however, Dr. Farlow was obliged from illness to give up his dispensary service, and he very kindly turned this most interesting case over to me. A lapse, however, of a fortnight had passed during which there had been no education, and, consequently, for the first two sittings I never even saw the larynx.

This condition, by constant work at my office, was somewhat remedied, and it was occasionally possible to introduce an instrument behind the epiglottis.

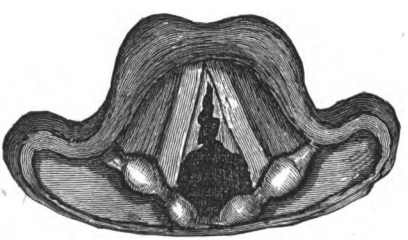

FIG. 2.—THE SAME ON NOVEMBER 9, 1883, SHOWING THE WEB IMMEDIATELY AFTER ITS RUPTURE.

There being no cutting dilator nor other instrument of the kind procurable in Boston, by the advice of Dr. Knight I tried the plan of introducing a pair of Mackenzie's forceps, closed, into the larynx, with a view

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to opening it subsequently when the web had been passed, and thus tearing it.

There were many, many failures. Once I felt sure that I had split it, but found that I had only scratched it, causing some little hæmorrhage. Even after Dr. Farlow returned to his work I occasionally saw the patient at my office, and on one of these occasions, November 9th, was so lucky as to get the forceps fairly down into the trachea, and, opening it fully and withdrawing it, found that I had split the web across, leaving a "jagged," dentated edge on either band.

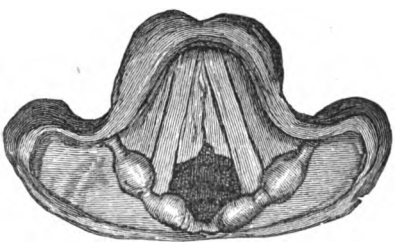

FIG. 3.—THE SAME ON NOVEMBER 10TH, SHOWING THE WEB WITH THE RUPTURED EDGES APPARENTLY JOINED TOGETHER.

The following day I saw the patient and found, to my dismay, that during the night the two halves of the ruptured web had apparently healed together. Certainly the voice, which immediately after the operation became low-pitched and hoarse, had resumed its former high key.

On November 11th I was able to break up the adhesions with a probe, so that the cords were almost normal in appearance, except that the edges still showed some remains of the web. This treatment of expansion was continued by Dr. Farlow occasionally.

About a month after this I saw the patient. Her larynx was almost normal, except that the vocal bands appeared to be fused together at the

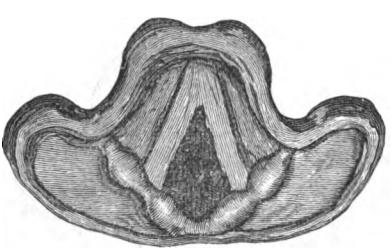

FIG. 4.—THE SAME ON NOVEMBER 12TH, SHOWING THE CONDITION OF THE LARYNX AFTER THE ADHESIONS WERE BROKEN UP WITH A PROBE.

anterior commissure. The voice, although not very clear, was about what you would expect to find in the ordinary girl of her age. The singing voice, as tested by Dr. Farlow, had gained three notes above and four below what she was able to sing before the operation.

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The bibliography of the subject is meager, there being, I believe, but three preceding cases on record.

Zurhelle ("Berlin. klin. Wochenschr.," December, 1869, p. 544) reports the case of an eleven-year-old boy who, as an infant, had never cried, and had learned to talk late. There was a membrane between the false cords about two thirds of the length of the chink; below this there was a second membrane projecting from the ventricular sinus and resting on the true vocal cords. After some weeks' preparation, the upper membrane and one third of the lower were split with the unconcealed probe-pointed knife. Fixation of the larynx was impossible, as the boy was restless. Several days afterward the rest of the second membrane was split. Local hæmorrhage was considerable; reaction slight. The voice was very much improved. Some fragments of the second membrane were visible at the anterior commissure; the rest had completely retracted into the sinus. The voice was absolutely normal.

Elsberg ("Trans. of the Am. Med. Assoc.," 1870, p. 217).—Miss S. K., aged seventeen, had a thin, feeble voice, hoarse, high-pitched, and husky. No syphilis. The vocal bands through their whole extent were covered by a membrane which occluded the rima glottidis between them in such a way that there was but a small opening posteriorly when the vocal bands were stretched to their full extent. This opening was irregularly circular, measuring only three lines in diameter. It seemed firmly united to the upper surface of the vocal bands. When they were approximated, the membrane was folded down so as to disappear from view. This membrane was cut in two operations, by a concealed laryngeal knife, after Tobold. The membrane, being very tough, was pierced with difficulty. After the operation, the patient complained of too much air in the chest, and, by inhalations of tannin and persulphate of iron, the shreds of membrane gradually contracted. The voice became louder and more normal.

Dr. Scheff, of Vienna ("Allgemeine Wiener med. Zeitung," July 9, 1878).—The patient was a baker's boy, twenty-two years old, in whose larynx there was a web-like membrane occupying the anterior two thirds of the rima glottidis, leaving an oval opening. This web was under the free edge of the true cords, and began at the anterior commissure. There was no trouble with respiration, but the voice was hoarse.

An attempt was made to cut first with a blunt-pointed concealed knife, which was not successful. Then local anæsthesia was used, and with a concealed knife a cut in the posterior edge of the membrane was made, followed by emphysema of the neck. On another occasion, with a concealed knife, another incision was made, and the edge touched with nitrate of silver. Then small pieces were removed with the forceps, etc. Although the web was entirely removed, the voice continued hoarse, owing to the treatment, and the patient disappeared before he regained his voice.

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Discussion.

Dr. HARTMAN questioned the advisability of the introduction of a pair of lateral forceps into the larynx, and its forcible expansion, and would prefer the covered or tube bistoury, or the galvanic cautery, for the division of webs.

Dr. ASCH.—Pertinent to Dr. De Blois's case is one that I have seen in my practice. I found a web occupying the anterior portion of the glottis, the result of acute inflammation. The patient, a teacher, had had no laryngeal trouble until, after a severe attack of acute laryngitis, she lost her voice. She then lived in England. She married and removed to Central America. Her health always remained poor after the laryngitis. Last summer she came to New York for treatment, having been sent with a diagnosis of laryngeal phthisis. A laryngoscopic examination showed the web as described. There was also a vertical web in one eye, stretching from the palpebral to the ocular conjunctiva, the result of acute ophthalmia. Her voice was weak. In consequence of her feeble condition, she declined to allow me to resort to operative procedures, which, apparently, could easily have been performed.

Dr. KNIGHT.—I saw this case with Dr. De Blois, and, in reply to Dr. Hartman, I wish to justify myself for having recommended the treatment adopted. The web was very thin, even transparent, and I believed that anything introduced into the larynx would cause its rupture with the least effort and without the slightest danger to the larynx. I must say that, so far as my experience goes, it would teach me that the galvanic cautery should not be used in the larynx, and, if I mistake not, most gentlemen who have employed it there have abandoned it, because of the danger attending its use at so great a depth.

Dr. DE BLOIS.—I do not think the account of the difficulties of the operation was fully appreciated by Dr. Hartman. When you have a patient who only about once in ten sittings is able to give any view of the vocal cords at all, and in whose case whatever instruments are introduced must be introduced at random, I can hardly think that the use of either the knife or the galvanic cautery would be justifiable. This web was quite thin, as Dr. Knight says, but I stretched it several times before it finally tore. It was tougher than I had anticipated. I do not know what danger Dr. Hartman would expect from the use of the forceps in a case of this kind. I do not see how it could do any more violence to the parts than cutting and the use of the dilator would. The woman menstruated normally, and there was no other explanation for the peculiarity of the voice than the abnormal condition in the larynx.

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Paper.

GUNSHOT WOUNDS OF THE LARYNX, WITH THE REPORT OF A CASE IN WHICH THE VOCAL BANDS WERE INVOLVED.

By WILLIAM H. DALY, M. D.

THE literature of gunshot wounds of the larynx has not, so far as I am aware, been collated, excepting the cases compiled in the Medical and Surgical History * of the late War of the Rebellion.

These are peculiar as a class, from the fact that the missiles producing nearly all of them were of a large caliber. Of the thirty cases there tabulated as involving the neck and larynx, ten were fatal, and the termination of ten more was unknown; eight patients were discharged, and two returned to duty.

Not having sufficient time in which to collate all the cases that might be more or less accessible, I have thought it not out of place to append to this report such a bibliographical list as I could obtain, which may aid others alike interested in this study in doing a piece of work that ought to be of signal and lasting interest to the throat surgeon as well as the general practitioner.

This can only be done by a systematic and extensive inquiry from the general profession, gathering cases here and there from the experience of private practice, and formulating them.

Such a work would at once be not only valuable, but highly interesting; and it is eminently fitting that this should be engaged in, at no distant day, by the learned body of throat surgeons represented by our Association (this assemblage).

The compilation of the cases of gunshot wounds of the neck involving the larynx and other portions of the air-passages, as well as the upper alimentary tract, found in the "Medical and Surgical History of the War," is a piece of work quite in keeping with the high character of all the other carefully digested records of work done by the army surgeons of the late war; and it is a pleasure to note among the contributors to this department the name of our esteemed colleague, Dr. S. W. Langmaid.

But, for civil surgeons, there should be a collation of cases from private practice covering the entire United States.

The missiles producing wounds in other than army life are of smaller caliber, and it is rather difficult to make a comparative

* "Medical and Surgical History of the War of the Rebellion," Part i, Surgical Volume, pp. 406, 407.

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deduction from the army records that would be found useful to us as civil surgeons.

Of some of the consequences of wounds of the larynx, aphonia is, as a matter of course, the most common; also exfoliation of cartilage, persistent fistula, and permanent distortion of the vocal apparatus. Six of the ten cases detailed in the war record referred to were followed by chronic cough and complete loss of voice, and similar results are described as occurring among those so wounded on the Confederate side.

Of the general report of 4,895 cases of gunshot wound of the neck in the late war, there was a death-rate of fifteen per centum.

But it must be understood that the figures were taken from the casualty lists and regimental field reports as well as returns from base or general hospitals, and thus the excessive mortality is explained, and many cases are included of grave injuries that never came under treatment; and few indeed that probably came under the treatment that the more modern surgery of the throat would afford, since the advances in this department have been greater subsequent than previous to or during the war.

On reference to some of our text-books we find but meager information on the subject. "The danger of such lesions penetrating the larynx," says Gross, "will be particularly great if, as sometimes happens, the opening extends to the vocal cords, as œdema of the glottis will then be almost sure to arise and occasion fatal suffocation.*

Cohen † speaks of the liability, in gunshot wounds, to serious contusion or laceration of the important nerves on the side affected, and ensuing paralysis or spasm of the muscles of the glottis, interfering with respiration.

The case which is here presented to you for your examination is that of a young man, aged eighteen, H. C. D., by occupation a student, who received, accidentally, a gunshot wound in the neck, from a .32 caliber pistol in the hands of a schoolmate, on the night of October 29, 1883, at a boarding-school in the State of Delaware.

The ball struck the neck a little anterior to and below the angle of the jaw on the right side, the pistol being held about five feet from the parts. the bullet taking a transversely downward course through the two walls of the larynx, and finally lodging upon the subclavian artery at the opposite side from the point of entrance.

* "System of Surgery," Gross, vol. ii, p. 383.

† Cohen, "Diseases of the Throat and Nasal Passages," p. 603.

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The symptoms arising immediately after the injury were: stinging or burning at the point of entrance of the ball, a sense of fullness in the throat, and a desire to clear it, the latter act being followed by the expectoration of fresh blood; hoarseness at first, which constantly increased until, within a few hours, there was complete aphonia.

This, in brief, was the history of the case up to the time I was called, November 5, 1883, seven days after the reception of the wound, to see him at his school, where he was attended by Dr. Chandler, of Brandywine, and Dr. Draper, of Wilmington, as consultant. With the former I made an examination of the patient. Externally, over the region of the neck, throat, and upper part of the chest, there was swelling with discoloration from extravasated blood; there was also emphysematous crepitation in the cellular tissue of the neck and chest.

There was a look of anxious alarm about the face; respiration nearly normal, but labored about the region of the larynx. Placing the patient carefully in a sitting position, a laryngoscopic examination was attempted, which revealed œdema of the glottis, with evidences of traumatic discoloration of such a character as to utterly destroy all the anatomical landmarks of the parts; a superficial examination was made for the ball, and a point found on the opposite side, six inches from the point of entrance immediately behind the left clavicle, that was exceedingly tender to the touch. While the ball could not be felt here by mere palpation, I strongly suspected that it was in this immediate locality, and, fearing further delay in its removal might result in secondary hæmorrhage, urged an attempt to discover its whereabouts by careful dissection.

This was acceded to by the attending physician and the father of the boy. The patient was prevailed upon to undergo the ordeal without an anæsthetic, fearing its use might bring on emesis and precipitate hæmorrhage, which it was desirable to avoid. A careful dissection at the point shown by this cicatrix was carried down deeply behind the clavicle, through tissues much swollen and ecchymosed, and predisposed to bleed.

This was done by drawing down the skin and superficial fascia and making the first incision upon the clavicle, then with the handle of the scalpel and a grooved director tearing my way down, carefully exploring as I went.

I was finally rewarded by being able to feel what I supposed to be the missile slipping away into its track at every effort to touch it; but, after further careful dissection, the ball was discovered and laid bare, immediately upon the subclavian artery, where its elevation with each pulsation of the blood-vessel was noted.

The ball was removed, and the wound made for the purpose healed kindly; twenty-one days later the boy had progressed so favorably as to make it desirable to take him to his home near Pittsburgh, stopping *en route* in Philadelphia, November 26, 1883, to enable us to obtain an examination and counsel in the case from our friend Dr. Cohen.

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This was done at Dr. Cohen's office, as thoroughly as the case would admit of, the traumatic changes in the larynx being of such a character as to make it impossible to discover the anatomical relations in any degree whatever.

There was complete aphonia, and the caliber of the glottis was probably less than one fourth of its normal size. Dr. Cohen was not of the opinion that the ball had penetrated the laryngeal walls, and further thought that the fixation of the left arytenoid in the position of farthest separation from its fellow was due to inflammatory changes which had taken place after the reception of the wound, and not to lesions caused immediately by the destructive force of the ball.

This was an opinion which he qualified by remarking our palpable inability at this time to make a satisfactory, or, in fact, any examination whatever of the interior of the larynx; stating, very properly, that nothing short of a daily study and observation of the case would lead to a comprehension of the lesion, and that the probable destructive changes which had been wrought rendered a favorable prognosis for recovery of vocal powers almost impossible.

In this opinion I fully concurred. However, three weeks after this consultation, when the tumefaction of the internal parts had subsided sufficiently to bring more of the interior of the larynx into view, I discovered a ragged lesion of the right vocal band near its middle portion, which nearly severed it, and which distinctly marked the entrance of the missile into the larynx, and, at the opposite side, a spot which, upon careful study and observation, plainly showed the point of exit of the ball from the larynx to be just at the lower portion of the ventricle of Morgagni, or immediately above the true vocal band, splitting the band, as it were, at its upper border. The first spot is now marked by a serrated cicatrix in the true vocal cord, and the opposite side is marked by more extensive post-lesional inflammatory changes, still apparent in the image of the larynx.

At this time I thought it expedient to resort to the use of the mild interrupted current, both intra-and extra-laryngeal. After two weeks of daily applications, lasting from three to five minutes, we were rejoiced to get a raucous vocal sound under the stimulus of the battery current.

This, however, was a very uncertain sound, and it was some weeks before there was any sonorous vocalization, excepting under the immediate use of the battery.

About January 1, 1884, there was an intra-laryngeal appearance rudely represented in Fig. 1, with an occasional sonorous note under great effort.

There was ankylosis of the left arytenoid, and no adduction of the left vocal band, excepting a short portion of its anterior end, under the powerful stimulus of the battery current. This ankylosis has gradually yielded to attempted powerful use of the voice, the patient being instructed, after all traumatic inflammation had been subdued, to suddenly attempt to shout several times in the day. This gradually loosened the left aryte-

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noid, and it was amusing as well as gratifying to see the first futile attempts at motion in this cartilage, and to notice its slow and almost

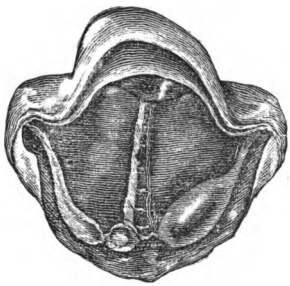

FIG. 1.—January 1, 1884.

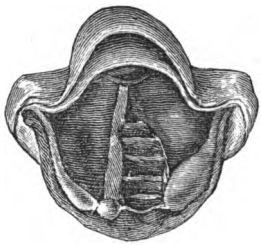

FIG. 2.—February 1, 1884.

daily increased motion until, as you will now see, it comes over to nearly its proper place in the vocal effort. The treatment persisted in was essentially a system of vocal gymnastics, with the daily application of the interrupted current, from five to fifteen minutes, only abstaining from its use when there was any evidence of congestion or pain in the larynx.

The vocal powers of this patient have been recovered so far beyond the most sanguine expectations of his physician and family that it presents a tempting field for reasoning as to the structures involved other than the immediate vocal cords themselves. It is true the injuries immediately inflicted upon these bands were not of themselves sufficient to maintain the prolonged adductor paralysis. The course of the ball, fully betrayed by the wounds in the larynx, proves not a matter of any certainty as to the course it pursued in the tissues of the neck on each side of this structure.

The nerves supplying the vocal apparatus are deeply placed in proximity to important blood-vessels.

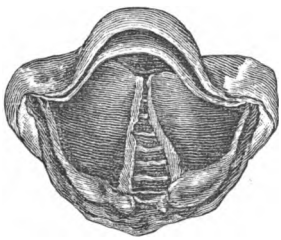

FIG. 3.—March 1, 1884.

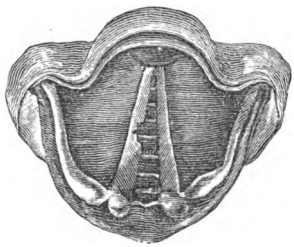

FIG. 4.—April 1, 1884.

That these great blood-vessels were not seriously wounded is quite certain, and that the laryngeal nerves were not immediately seriously

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wounded or severed seems almost positive, because the boy spoke after receiving the wound, and the injuries to the nerves were of the nature of contusions, or changes due to traumatic inflammation.

An intra-laryngeal inspection in this case, April 22, 1884 (see Fig. 4), reveals the arytenoid of the left side almost as mobile as its fellow. The epiglottis, which was from the first drawn toward the arytenoid of the left side by reason of contracture of the ary-epiglottic and subjacent tissues, is now symmetrical and almost normal. Upon the right vocal cord, about one half the distance from the anterior end, can be seen what resembles a serration in the free edge of the band.

This serration marks the point of entrance of the missile into the larynx. The left vocal cord is seen to be less mobile, and the free band-like structure is split laterally in its longitudinal axis, so that its measurement, looking from above downward, is four times its normal thickness, especially at that portion next the cartilage.

The ventricle of Morgagni is on this side obliterated by the traumatic distortion, and, indeed, the ventricle is scarcely discernible on the opposite side.

I shall leave any reasoning I might engage in as to the question of concomitant or subsequent lesions in this injury for the discussion by those of my fellows who may feel competent or willing to engage in it. Suffice it for me to say, the boy has regained powers of vocalization, if not equal to what they would have been without the injury (and which I do not assert), yet which are excellent, and ample for nearly all the needs of life other than those of the orator or elocutionist—since in his conversational voice there is little fault that can now be discovered by other than the expert—with a prospect of further intra-laryngeal improvement in the yet somewhat distorted tissues, that gives a reasonable hope of a perfect restoration of all the natural vocal powers of the individual patient.

Dr. Fauvel contributes the following curious case ("Revue mens. de laryngol.," October, 1881):

The patient, ten years before, had received a gunshot wound under the left eye, and medical opinion was divided as to whether the bullet had remained in the head or not. For three months pus and small pieces of bone were discharged through the mouth.

The man had since suffered, at frequent intervals, from acute pain in the head and jaws, and his general health was impaired.

Seven months ago he first felt pain in the throat and in the jaw near

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the temporo-maxillary articulation and left ear, with pricking sensations, which he compared to a needle plunged in the ear.

Later on the same pricking sensations and pain were felt in the left side of the larynx. There were expectoration of blood, cough, hoarseness, trouble in swallowing, and, finally, aphonia.

Liquids could scarcely pass.

At this crisis laryngoscopic examination was made, and a dark, irregular, lobulated, fungating-looking mass was discovered, filling up the left half of the glottis and concealing the greater part of the left vocal cord.

The other parts of the throat were normal. The tumor most resembled a melanotic growth; but, in consideration of the rarity of such growths in this situation, it was thought rather that the patient was suffering from the ulcerative stage of laryngeal phthisis. But afterward, as the tumor increased in size and seemed very firm and resisting to the touch, it was diagnosed as osteoma, and its extraction decided on.

Attempts that were made to remove it were not at first successful. The patient passed the night in coughing and vomiting, and, during a fit more violent than the rest, expelled a hard, heavy body, which proved to be a bullet. From this date the patient recovered his voice, and all pain and trouble in swallowing disappeared. Nothing could be seen of the tumor except the slight scar where the bullet had passed through.

On rhinoscopic examination, some small perforations in the upper part of the naso-pharynx were discovered.

Dr. Fauvel, after remarking upon the difficulty attaching to the diagnosis of this case, says that it is equally difficult to explain the manner in which the ball passed downward into the larynx.

He suggests that, having entered apparently below the malar bone, the bullet penetrated obliquely between the ascending ramus of the inferior maxillary and the superior maxillary bone, and became lodged in the basilar process of the occipital bone, in front of the vertebral column and behind the pharyngeal aponeurosis.

The ball, instead of becoming encysted, was probably set free by the surrounding bone becoming necrosed, which would account for the discharge of the pus and spiculæ of bone, and the perforations in the naso-pharynx, afterward seen by the rhinoscope.

Yielding to the force of gravity, it then slowly descended in front and to the left of the vertebral column, being concealed from view, first, by the veil of the palate, and afterward by the posterior pillars of the fauces.

When it reached the base of the tongue it changed its direction, and, passing forward and downward, became lodged in the left ary-epiglottidean fold.

Dr. Langmaid writes, April 25, 1884, concerning the soldier

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Young, whose case is reported in the "Medical and Surgical History of the War," that the patient still wears a trachea tube, and has scarcely any inconvenience from it. He says: "I have examined his throat from time to time; the vocal cords are concealed by a valvular tumor, the base of which presumably occupies the situation of the original wounds, and is, I suppose, the result of an inward prolongation of granulations."

I say valvular tumor, for its action is like that of a pump-valve. Inspiration through the mouth is impossible, but expiration (the external opening of the fenestrated tube being closed by the finger) raises the tumor, and the voice-sounds are easily produced.

Any operative interference with the tumor intra- or extra-laryngeal is firmly refused.

Dr. Samuel Johnston, of Baltimore, sends me a clipping from one of the Baltimore daily papers, of April 21, 1884, which mentions a case of a terrible wound of the neck and throat received by Count von Borcke at Aldie; this officer was once on the staff of Stuart's cavalry in Virginia.

The necessary particulars for our purpose in this case being wanting, I merely mention it as a matter of record for future use if needed.

From Dr. Thomas F. Rumbold I get the following:

"A. M. Groves received a gunshot wound through the larynx December 15, 1879. The missile (a duck-shot, probably No. 4) entered the left side, about one inch posterior to the pomum Adami, passing horizontally and laterally through the larynx, wounding both vocal cords."

The doctor saw the case about seventeen days after the wound was received; the parts were healed, but the marks of the missile were yet perceptible.

The vocal effort, which became aphonic at once after the wound, was, at the doctor's first examination, described as "squeaky." The case was only seen once, and was not made the subject of treatment.

There can be little doubt, however, that the interrupted current would have been beneficial.

Dr. R. B. Tauber, of Cincinnati, kindly sends me the following notes:

"J. S., aged forty-six, was shot in the neck while on a steamboat during the late war; the ball could not be discovered. He complained of dysphagia, was aphonic, and had slight shortness of breath. For twelve years the bullet lodged in his larynx; at the end of that time he consulted

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me, and, on making a laryngoscopic examination, I found the space of the left sinus pyriformis entirely covered over. I introduced the laryngeal sound, and found the bullet in this cavity lodged very tightly. I removed it, and found it to be a conical ·25 caliber, and half an inch long."

The patient measurably regained his voice afterward, and was otherwise relieved of his distressing symptoms.

The voice, however, was described as being imperfect, or, in the language of the doctor, a "monotonous voice."

This case has a striking likeness in its character to the one so graphically detailed by Fauvel, and is worthy of being recorded in its company, deserving a decidedly more extended record:

The second case, given me so courteously by Dr. Tauber, is that of H. L., aged thirty, married, who had syphilis eight years before he was shot in the neck. The bullet entered the right side, under the angle of the inferior maxilla, passed through the epiglottis, injured both arytenoids, and made its exit opposite on the left side, about the sterno-cleido-mastoid muscle. The patient had great dysphagia and dyspnœa; voice not above a whisper; food regurgitated; breath very offensive. Laryngoscopically, the entire larynx was deep-red and congested. Three fourths of the epiglottis were gone, and only a small red stump left. Both arytenoids are at the present time enormously hypertrophied; the stump of the epiglottis has healed. The vocal cords are thickened and reddened, though the patient has regained his voice, and is an expert at swallowing food, which seldom enters the larynx.

My friend Dr. D. N. Rankin kindly reports the case of John Horner, aged twenty-three, soldier in the late war, who was under his care while serving as assistant surgeon in the army:

This man received a gunshot wound, involving the upper part of the larynx, while on picket-duty. The ball entered at the malar process of the right side of the face and passed downward and backward, wounding the nasal passages, tongue, œsophagus, and larynx, making its exit at a point about two and a half inches below the angle of the left inferior maxillary bone. The patient was nourished by means of the stomach-tube, and finally recovered, with good powers of deglutition and vocalization.

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Discussion.

Dr. COHEN.—I have had recent occasion to study the subject of gunshot wounds of the larynx, and have been astonished to find how rare they are in military practice. With regard to the case reported by Dr. Daly, which by that gentleman's kindness I have had the opportunity of examining, I was unable at the time to believe that the ball had traversed the larynx, but thought that it had been deflected around the larynx and had then passed to the point from which it was removed. The missile must have made quite an acute turn to reach that spot after traversing the larynx. The laryngoscopic inspection made by me revealed a larynx much congested and considerably distorted, while the left vocal band was fixed. In view of the subsequent history of the case, as presented in Dr. Daly's report, I am prepared to admit that my former opinion—that the ball had not penetrated the larynx—was an incorrect one.

Dr. LEFFERTS.—There is a specimen of gunshot wound of the larynx in my collection, in the Museum of the College of Physicians and Surgeons, but, unfortunately, without a history. It illustrates a point alluded to by one of the speakers—viz., that a clean-entrance wound could be made through the thyroid cartilage without stellar fracture of that plate. There is in the specimen no wound of exit, the tissues in the interior of the larynx are torn and displaced, and the presence of a tracheotomy incision would show that the ball had remained in the larynx and necessitated tracheotomy for dyspnœa.

Dr. LANGMAID.—With regard to the case under my care, to which Dr. Daly referred, the patient has worn the tube since 1860, and I would modify the statement quoted in one regard: that, if one has to wear the tube a long time, the greatest care should be exercised in its construction. On two occasions this man has suffered difficulty from oxidation of the

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tube. On one occasion he came from New Brunswick to me at Boston, holding on to the end of a silk thread caught on one portion of the tube, which by oxidation had become severed from the remainder and had fallen into the air-passage. He had made this long journey being in constant fear lest the piece of silk should lose its hold and the portion of the tube fall down the trachea and block the passage to the lungs. With regard to the shape of the tumor, it is such as to press upon the glottis and act as a kind of valve, and interfere with speech in such a way that the patient seeks relief in conversation by raising the hand to the larynx and making pressure. Fortunately, the tube was inserted low in the trachea.

Dr. Asch.—Cases of gunshot wound of the larynx are extremely rare. I served as a medical officer in the United States Army for twelve years, and acted as Medical Inspector of the Army of the Potomac during the Wilderness campaign of 1864, and no cases of gunshot wound of the larynx occurred in my sphere of duty.

Paper.

A CASE OF PARALYSIS OF THE LEFT VOCAL BAND IN EXTREME ABDUCTION, FOLLOWING AN INCISED WOUND IN THE NECK.

By J. SOLIS-COHEN, M. D.

THE unique case here reported appeared at the Laryngoscopic Department of Jefferson Medical College Hospital in November, 1883, and was brought to my attention by Dr. Louis Jurist, one of the chiefs of clinic in that department. Shortly thereafter the patient became an inmate of the State Hospital for the Insane at Norristown, Pa., at which institution my friend Dr. Chase, the superintendent, has kindly afforded me every opportunity for examining this interesting larynx.

A. L., aged thirty-three, a drug clerk of Bohemian proclivities, and a slave to morphine, states that, while under the influence of liquor, on a lonely road a few miles from Omaha, in June, 1883, he was attacked by thieves, who threw him down and cut his throat. Within less than half a minute after being cut, and in the very act of crying for help, his voice gave out. The aphonia has been permanent.

Upon laryngoscopic inspection, the left vocal band is seen fixed in extreme abduction. The movements of the right band are normal in inspiration (Fig. 1) and expiration (Fig. 2), and that band passes the median line on attempted phonation (Fig. 3), as shown in the excellent drawings made for me by Mr. Max Stern, of Philadelphia, an undergraduate of Jefferson Medical College.

In forced inspiration the right vocal band recedes toward the side

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of the larynx, but no farther back than the fixed position of the left band, the shape of the glottis, indeed, apparently indicating that the voluntary

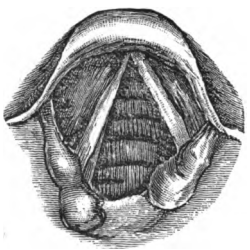

FIG. 1.—In forced inspiration.

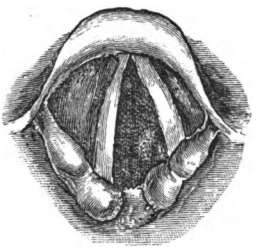

FIG. 2.—In expiration.

abduction on the uninjured side is not quite so great as the permanent abduction on the impaired side (see Fig. 1). In strong attempts at phonation, not only does the right vocal band pass beyond the middle line, but

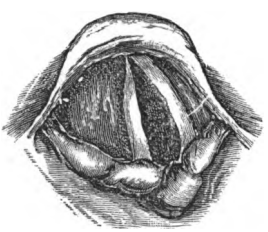

FIG. 3.—In attempted phonation.

the force of the expiratory blast of air throws the middle portion of the paralyzed vocal band upward (see Fig. 3), and sets it into a mechanical vibration, which yields a rough tone, but a tone in no wise phonic in the true vocal sense of that term.

It is a matter of regret to me that several of the members of the Association who have passed through Philadelphia did not avail themselves of an opportunity tendered them of examining this interesting case, inasmuch as it has not been feasible for me to have the patient brought here for inspection.

The paralysis seems due to lesion of the pneumogastric nerve in the wound of the neck, which, as may be seen from the plaster cast herewith presented, has been quite an extensive one. The sterno-cleido-mastoid muscle has been severed, and there is no trace of pulsation along the course of the carotid artery, or in its vicinity. The patient declares that the carotid artery was tied by the surgeon called to his assistance, but I have been unable, in a correspondence instituted for the purpose, to find any surgeon, in the neigh-

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borhood where the lesion is said to have occurred, who has any cognizance of the case. The statements of the patient are not to be relied on, and the injury probably took place in some other locality.

The incised wound in the neck, declared to have been homicidal, was evidently suicidal, as can be recognized in the cast before us. It resembles in its configuration the usual suicidal wound as I have seen it in a number of unquestionable cases.

The knife was evidently applied from behind forward. Starting quite superficially, the cut soon became quite deep, reaching its greatest depth in the carotid region, and then, becoming gradually more superficial, barely penetrated the skin for the last inch of its course. Described from before backward, the cicatrix extends anteriorly a little to the right side of the thyroid cartilage, about half an inch above the crico-thyroid membrane, crosses the larynx horizontally, and then traverses the entire left side of the neck, dropping an inch and a half in its course to a point behind the posterior margin of the sterno-cleido-mastoid muscle. The whole cicatrix is four inches and a half in length, and about one inch in width at its broadest portion. It is broadest in the region just posterior to the normal posterior margin of the divided and retracted sterno-cleido-mastoid muscle, where it has a gashed appearance, as though several cuts had preceded the main one. Two inches below the mastoid process of the temporal bone is a marked protuberance formed by the retracted upper segment of the sterno-cleido-mastoid muscle.

Discussion.

Dr. Knight.—I think we ought to take evidence of this kind with much care. Why could not this have been a case of injury simply of one of the adductors? Why is it necessary to suppose that a portion of the nerve had been injured? It seems to me almost impossible, in the absence of a post-mortem examination, to gain much positive information from this case. There are so many disturbing elements in studying the question of the function of the recurrent laryngeal nerve that it is difficult to draw positive conclusions from cases of this kind.

Dr. Lefferts.—It needs, Mr. President, a very expert eye to diagnosticate between extreme abduction and cadaveric position of the vocal cord, which also would have taken place had the recurrent nerve been severed. Of course, I accept willingly the testimony of an expert like Dr. Cohen, but, as stated, it is very difficult to differentiate between extreme abduction, the condition which Dr. Cohen describes in his case, and the cadaveric position. I once reported the case of a woman whose larynx

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was wounded by a pair of shears in the hands of her husband. The right recurrent laryngeal nerve was evidently severed. She endeavored to call out at the time of the injury, but found herself practically voiceless. At first the aphonia was nearly absolute, and remained in less marked degree ever afterward.

Examination of the larynx showed the cord in the cadaveric position, although the question was raised whether it was not simply in a state of abduction. It seems to me that the case was similar to the one under Dr. Cohen's observation.

Dr. SEILER.—I do not think that the cadaveric position necessarily follows section of the recurrent laryngeal nerve. Experiments upon a criminal, made years ago by Weir Mitchell and another gentleman, demonstrated that when one nerve was cut there was paralysis, but not complete, of the muscle of the same side.

The PRESIDENT.—I have never been able to understand how, in a case of complete severance of the pneumogastric nerve, or of that portion of it supplying the larynx, the muscles supplied by it could retain any degree of power. With regard to the question of diagnosis between extreme abduction and laryngeal paralysis, of some fifty or sixty cases of laryngeal paralysis which have come under my observation, in all there has been retention of voice. In only one or two cases was there at first a change of the voice to the falsetto, and that in time disappeared. I should suppose that in extreme abduction there would be complete loss of the voice.

Dr. COHEN, in closing the discussion, said: It is all important, in judging of the case under discussion, to see the patient, and I therefore regret very much that the gentlemen did not accept my invitation, when passing through Philadelphia, to visit the asylum where the patient is confined. There certainly could have been no direct injury to the recurrent laryngeal nerve; if any of the nerve-fibers supplying the larynx have been cut, it must have been before their departure from the pneumogastric. If, as we know, the abductor fibers of the nerve supplying the vocal bands may first be affected in some instances, why should not the adductor fibers alone be affected in other instances? May there not be two sets of nerve-fibers, the abductor and the adductor, in this case the latter group being affected?

I recognize no difficulty whatever in distinguishing between the cadaveric position and that of extreme abduction. In the latter condition the position of the bands is the same as is seen in extreme inspiration.

Adjourned at 5 P. M.

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Second Day, Morning Session.

BUSINESS MEETING.

THE meeting was called to order by the President at ten o'clock, and the reports of officers and committees presented as follows:

Secretary's Report.—The Secretary presented, as his report of the proceedings of the year, the Fifth Annual Volume of the Transactions of the Association, and stated that, owing to the suspension of the Archives of Laryngology, some new arrangement would have to be made for the future publication of the Transactions. He presented a proposition from Dr. Frank P. Foster, editor of the "New York Medical Journal," offering to publish the Transactions in a style uniform with that of former editions, and upon terms which were eminently liberal and satisfactory, as explained in his formal letter to the Secretary. The report, together with the proposition of Dr. Foster, was unanimously adopted.

The Secretary called attention to the loss of the remnant of the edition of Volume II of the Transactions, for 1880.

It was moved: That the Secretary be authorized to offer two dollars each for copies of the missing edition, in order that it might be made possible to supply the Transactions to any who might wish them in complete sets. Carried.

By direction of the Council, the Secretary called attention to the failure of Dr. Wagner to furnish his paper, read at the last meeting, for publication in the Transactions.

Moved: That Dr. Wagner be requested to explain this failure to the Council, the Council having authority to act in the matter. Carried.

Moved: That in future the Secretary embody in the preliminary notice of the annual meeting the section from the By-Laws relating to the publication of papers. Carried.

Treasurer's Report.—

AMERICAN LARYNGOLOGICAL ASSOCIATION, MAY 13, 1884,

In Account with D. Bryson Delavan, Treasurer.

By receipts for 1884	$302.65
By expenditures	298.24
Balance on hand	$4.41

Audited and found correct, D. BRYSON DELAVAN,
JOHN N. MACKENZIE. *Treasurer.*

Librarian's Report.—The Librarian, Dr. Thomas R. French, reported that, as the library had not yet come into his possession, he had no report to offer. The former Librarian had not been able to find the time in which to prepare a catalogue of the library, and it had not, therefore, been sent to the present incumbent.

The report of the Librarian was accepted. Moved: That the Librarian be authorized to employ a clerk to catalogue the library, that fifty (50)

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copies of the catalogue be issued, and that one copy be sent to each member of the Association. Carried.

Committee on Diploma and Seal.—This committee, through its chairman, Dr. F. H. Bosworth, presented two designs which had been furnished by the Secretary of the Association, and recommended that the diploma for honorary and corresponding fellows be engrossed, and not engraved.

Moved: That the design marked "A" be accepted, and that the Secretary be ordered to have a die cut whenever the state of the treasury would allow. Carried.

Moved: That Dr. Bosworth's recommendation as to having diplomas engrossed be accepted. Carried.

Committee on Nominations.—The Committee on Nominations reported as follows:

For President.—Dr. E. L. Shurley, Detroit.
For First Vice-President.—Dr. J. H. Hartman, Baltimore.
For Second Vice-President.—Dr. W. H. Daly, Pittsburgh.
For Secretary and Treasurer.—Dr. D. Bryson Delavan, New York.
For Librarian.—Dr. Thomas R. French, Brooklyn.
For Member of Council.—Dr. Frank Donaldson, Baltimore.
For Member of Council (to fill vacancy for one year).—Dr. F. H. Bosworth, New York.

Place and time of next meeting, New York city, third Monday in May, 1885.

F. I. Knight.
[*Signed*] J. Solis-Cohen.
G. M. Lefferts.

Miscellaneous Business.—Dr. J. Solis-Cohen moved that the limit of membership of the Association be increased from fifty to sixty.

Dr. Knight, in opposing the motion, called attention to the importance of admitting to the Association only such candidates as had already qualified themselves for membership, and had become generally known by means of special literary or scientific work, mere introduction by one or two fellows of the Association, and the presentation of a thesis of greater or less merit, not being a sufficient guaranty.

Dr. Ingalls also opposed the motion, and recommended that not more than one candidate be admitted each year.

Dr. Cohen's argument, that a number of eligible men were prevented from becoming candidates because the membership of the Association was reported full, was met by the suggestion that almost the only work done in the department of laryngology in this country was from the pens of those already fellows of the Association. The motion was lost.

Dr. Seiler gave notice that he would, at the next meeting, offer amendments to the By-Laws as follows:

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1. Hereafter, every candidate for membership to the Association shall be a graduate of at least three years' standing.

2. The admission thesis of each candidate, after having been accepted by the Council, shall be read at a regular meeting of the Association by the candidate, and discussed by the Association, before his election can take place.

Paper.

A CASE OF CAVERNOUS PAPILLOMA OF THE VOCAL BAND.

By FRANKLIN H. HOOPER, M. D.

THE features of this case, which seem to me of sufficient interest to warrant its being reported, are: 1. That, histologically, the tumor differs from any recorded case of intra-laryngeal growth. 2. That, although the diagnosis of "cyst containing blood" was justifiable from the appearances on laryngoscopic examination, in the clinical aspects of the case there were notable differences from those instances of laryngeal cysts and angiomata with which we are familiar through the writings of Moure, Cervesato, Tobold, Fauvel, Elsberg, and others. 3. The rather unusual and unexpected, but happy, termination of the disease.

The patient was first seen by Dr. Knight, November 22, 1882, at which time he refused to submit to any operative measures. Returning in the summer of 1883, at a moment when Dr. Knight was compelled to leave the city, he was referred to me for treatment. The history is as follows:

T. G. C., a clergyman, thirty-two years of age, of nervous, energetic temperament, has always enjoyed good health, with the exception of his present trouble, which began in September, 1882, from taking a severe cold, accompanied by hoarseness. The symptoms of the cold lasted about three weeks, but the hoarseness has remained to the present time (August 1, 1883), causing him so great annoyance and distress that he had about made up his mind that it would be necessary for him to abandon his profession. Apart from the hoarseness, there has been no symptom referable to the larynx other than a disposition to continually "scrape" it, and it seemed as if, by an extra effort, he might remove the source of the trouble.

Examination with the laryngoscope revealed a small nodular, sessile growth, situated on the anterior third of the left vocal band, and projecting from its free edge. Its size may be compared to a No. 7 shot ($\frac{10}{100}$ inch in diameter). Its walls were smooth, of a pale-yellow color, and, when examined with the sunlight, the red color of the blood within

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could be distinctly seen through them. The situation and shape of the growth suggested that it might be classed under the head of "cystic tumor"; but its peculiar color, the impossibility of applying the probe test on account of its small size, and the general appearances, so unlike the descriptions of angiomata, rendered the diagnosis as to its real nature somewhat doubtful. It was surmised, however, that the primary cause had been either a dilated or perhaps a ruptured capillary, the blood becoming subsequently encapsuled.

At the patient's second visit Fauvel's forceps was passed into the larynx, and borne well against the left vocal band. No attempt was made to open the forceps while in the larynx, the object of the procedure being principally to test the patient's tolerance of the instrument, and with but the faintest hope that it might make some impression on the tumor. On removing the forceps, it was with considerable surprise to myself, as well as gratification to the patient, that the growth was seen floating in the tumbler of water in which the instrument had been placed. The hoarseness had disappeared, and the voice was immediately restored. The growth had been knocked off close to its attachment to the vocal band, and had luckily adhered to the end of the instrument, together with a certain quantity of mucus. The hæmorrhage was insignificant, amounting merely to a single drop of blood. The growth was firm to the touch, and retained its globular form. It was handed to Dr. W. W. Gannett, pathologist to the City Hospital, for examination, and the subjoined report and drawing of the microscopical appearances were kindly furnished by him.

CAVERNOUS PAPILLOMA.

"The above is a diagram of a section vertically through the tumor of the larynx, left a few days ago. The outer covering is a many-layered, flat epithelium, showing dentate cells. Next is a rather loose connective-tissue wall, forming on its outer portion a basis for the epithelial cells, and on its inner surface the lining of a rather irregular cavity, with projections from the wall into the cavity, these representing, probably, tra-

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beculæ which had been cut across. The cavity itself is filled with red-blood corpuscles. The wall has not the structure of a *vessel* proper, but is rather a cavernous tissue.

"My opinion is that it was a cavernous tissue from the start, and does not represent a dilated blood-vessel.

"I do not remember to have seen such a tumor before, but should think the term *Cavernous Papilloma* justifiable."

[Signed] W. W. GANNETT.

The patient was advised to abstain from preaching, and to allow the larynx as complete rest as possible for at least one month, but no special treatment was directed to the seat of the growth, and the day following its removal he left the city for his home in a neighboring State. There has been no recurrence. In a letter received April 10, 1884, he writes, in answer to my question, that he has "held special meetings six weeks in succession, talked or preached every night, and throat as good as new."

The only recorded case which bears any resemblance histologically to the one under consideration is described by Fauvel * as a "papillary polyp, with very pronounced vascular dilatations, making it resemble an angioma," which rather meager account is all that is given of its minute structure.

Dr. Fauvel's patient was a man, twenty-eight years of age, who for two years had been troubled with a progressive hoarseness. The tumor, of the size of a pea, rounded and smooth, was situated on the free edge of the right vocal band, and had a broad attachment. It was of a peculiar blackish color. Many attempts were made to remove the growth, but with no result except to bruise it, as it would glide from between the blades of the forceps each time it was grasped. Dr. Fauvel suggests that the cavities which were filled with blood may perhaps be accounted for by these manipulations which forcibly compressed the tumor. It was finally removed by evulsion, the hæmorrhage being more than usually abundant. No recurrence took place.

Discussion.

Dr. CARL SEILER.—I am very glad to have heard the history of this case, the more so because I have met with one similar in almost every detail. The tumor was an angioma, of small size, of dark-red color, situated on the upper surface of the right vocal band, and not projecting from the edge. The man was studying elocution, and only complained of slight hoarseness. After considerable difficulty I succeeded in nipping off the growth. On examination, it was found to be composed of cavernous tissue, constituting a true angioma. The cavernous structure was small as compared with the epithelial.

* "Traité pratique des maladies du larynx," Paris, 1876, p. 522.

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Paper.

A CASE OF ECCHONDROSIS OF THE LARYNX.

By MORRIS J. ASCH, M.D.

Cartilaginous tumors of the larynx are of such infrequent occurrence that possibly the report of a case may not prove uninteresting. There are very few cases of the kind on record. Froriep described a case of chondroma of the larynx where three large, partly ossified tumors sprang from the thyroid cartilage and considerably narrowed the laryngeal cavity.* He also cites a case from McIlwain, "Edin. Med. and Surg. Journal," 1831, which, however, is doubtful as to the diagnosis. Virchow describes rounded excrescences, springing from the cricoid, which become more and more pointed, and one case where the tumor arose from the anterior inner surface of the thyroid; here the excrescence was ossified, and formed a true exostosis, under which the mother cartilage was preserved intact. (Virchow, "Path. des tumeurs," vol. i, p. 442, Traduc. Ahronson.) The case of bronchial stenosis, the result of ecchondroma, reported by Gerhardt ("Jen. Zeitschrift für Med. u. Stat.," Band iii) can scarcely be considered a case of laryngeal growth. Mackenzie reports a case where a cartilaginous tumor, arising from the cricoid cartilage, extended downward in front of the trachea (Mackenzie on "Growths in the Larynx," p. 54). Musser (Path. Soc. of Phila., in "Phila. Med. Times," May 6, 1882) reports a case of ecchondroma of the larynx where a tumor of the size of a walnut grew from the posterior surface of the cricoid cartilage into the lumen of the larynx. The diagnosis here was made after death, the patient having died of pneumonia following tracheotomy. No microscopical examination is given in the report.

I find, however, but two cases reported where cartilaginous tumors of the larynx were diagnosticated as such and treated during the lifetime of the patient. One case is recorded by Ehrendorfer ("Wiener med. Woch.," July 2, 1881), where the tumor grew from the back of the thyroid cartilage and made its way into the larynx by passing between the arytenoid cartilages. It was removed by Billroth by external incision, the nature of the growth having been ascertained by the removal of a piece during the operation of tracheotomy. The other case, the only one reported where the affection

* R. Froriep, "Preuss. Vereinszeitung," 1834, No. 38.

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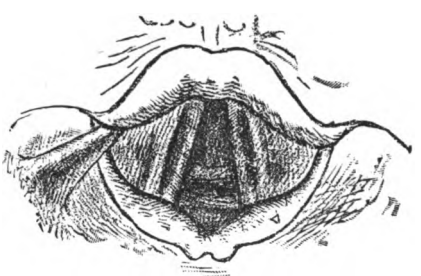
was treated by the endolaryngeal method, occurred in the practice of Stoerk ("Klinik der Krankheiten des Kehlkopkfes," p. 417), where the tumor sprang from the arytenoid cartilage. Particular interest attaches to such tumors from the fact that Virchow states (*op. cit.*) that, from their thickness and hardness, they can not be removed *per vias naturales.*

R. C., aged forty-two, presented himself to me a few months ago, complaining of constant irritation of the throat, attended by frequent hoarseness. He was an amateur vocalist of considerable merit, and insisted that there was something in his throat which prevented a complete development of his vocal powers. He had been under treatment for chronic laryngitis for a long time without result. A laryngoscopic examination showed a curious growth springing from the inner surface of the thyroid cartilage, apparently at the base of the superior cornu of the right side. It projected anteriorly and inward toward the base of the epiglottis for about five sixteenths of an inch. It was conical in shape, and covered by mucous membrane, which it pushed before it in a tent-like manner, and which, during certain movements of the throat, rose over the growth, completely hiding it. I had never seen such a



growth, and was puzzled at first to make out its nature. Frequent examination, and touching it with the finger as well as the sound, convinced me, however, that I had to do with an ecchondrosis—a cartilaginous tumor springing from cartilage, as distinguished from an enchondroma where the cartilaginous tumor originates from bone or any substance other than cartilage (Virchow and Cornil and Ranvier)—in which opinion Dr. A. H. Smith, who saw the case in consultation, agreed. At first I was in doubt whether to attempt its removal by the endolaryngeal method, or by external incision, being influenced by Virchow's statement as to the hardness of these tumors, and I had not at the time read Stoerk's account of his case. However, as the tumor seemed to afford an excellent opportunity for attempting its removal by the mouth, and as the patient was exceedingly anxious to be rid of it, I determined upon this operation. The shape of the tumor indicated the guillotine

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as the instrument to be preferred. I accordingly had a very strong and sharp one made after Stoerk's pattern, having the ring of steel with a cutting edge on its upper border, the stem being bent to the left, so as to give greater facility in viewing and manipulating the growth. On the 15th of April last the patient presented himself for the operation, which I performed, assisted by Dr. C. H. Knight. At first it was extremely difficult to include the growth in the ring of the instrument. The patient was brave but nervous, and his larynx was in constant motion. On every attempt to seize the tumor the movable mucous membrane would rise and completely cover it, and it was only during phonation of certain sounds that I was able to see it satisfactorily. In making an attempt at section, I cut off a piece of the mucous membrane at its apex; through this the growth protruded, and at the next attempt the instrument encircled it to its base and the removal was effected without difficulty. There was no hæmorrhage. There was a little pain in swallowing for a few days, after which the throat was perfectly normal. The voice has improved, according to the patient's statement, to the extent of adding two notes to his register, which, I need scarcely say, affords him great satisfaction.

A microscopic examination was made by Dr. G. L. Peabody, Pathologist to the New York Hospital, who reports as follows, after examining several sections without finding any ossification:

Each of these sections consists of cartilage *at its center*, in many cases well preserved. There are large lumps of blood-pigment in the matrix, in the capsules, and occasionally in the cartilage-cells. Some of the sections show the "asbestos" degeneration of the matrix, and the further change of cells, etc., into lumps of calcareous material, into which carbonate of lime enters largely. By adding sulphuric acid I have decomposed this carbonate, and seen under the microscope the evolution of carbonic-acid gas in two sections. These forms of degeneration take place physiologically in the costal cartilages, and doubtless elsewhere, in advanced life.

Thus, gentlemen, I have described a case of cartilaginous tumor of the larynx undergoing calcareous degeneration—a case interesting for its rarity, and valuable as being a proof that such tumors come fairly within the province of the laryngoscopist, not merely for diagnosis, but for their cure by endolaryngeal methods.

Discussion.

Dr. Cohen.—I have never seen a similar case, and but two or three specimens of ecchondrosis of the larynx are to be seen in the museums in Europe. With regard to recurrent laryngitis, there are some cases

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in which it is due to the influence of a growth outside of the larynx proper. It is somewhat peculiar that the removal of the tumor in Dr. Asch's case should have had the effect of increasing the resonant powers of the voice in so marked a degree.

Dr. SEILER suggested the explanation that the tumor had interfered with the resonant cavity above the vocal bands. It was not probable that the tumor could so interfere with the bands as to make a difference of two notes in the scale.

Dr. LANGMAID.—I think the reason for the increase in the vocal resonance very problematical. It seems strange, as Dr. Cohen has suggested, that anything outside of the muscular apparatus should interfere with the tone, or that its removal should increase the scale. It is possible that the so-called moral effect of removal of the obstacle may have had something to do with encouraging the voice to act. I should not like to deny Dr. Seiler's proposition, but should rather think the two facts combined—namely, the removal of the laryngeal irritation, and the moral encouragement given by removal of the obstacle—would account for the increase in the scale.

Dr. ASCH was inclined to accept Dr. Langmaid's explanation of the change in the voice.

Paper.

A NEW METHOD FOR THE REMOVAL OF LARYNGEAL GROWTHS, WITH AN ILLUSTRATIVE CASE.

BY WILLIAM CHAPMAN JARVIS, M. D.

IT may appear presumptuous, at this late day, for any one to offer a novelty in a department of laryngology so extensively developed and upon a theme so well worn as that pertaining to laryngeal neoplasms, and this, too, before a body of experts skilled in the knowledge and practice of the various methods employed for their removal. Any hesitancy, however, on this score has been dismissed through personal conviction, based upon accumulated evidence, indicating the utility and in some respects the novelty of my method, re-enforced by a special request to introduce the subject for your consideration and criticism.

My remarks will be confined to the employment of chromic acid for the removal of laryngeal papillomata. The success which has attended the use of this escharotic in my hands has encouraged me to relate my experience and invite a fair trial in accordance with the rules laid down in this paper.

Of the several principles employed for utilizing the destructive activity of caustics, that of direct fusion has been adopted.

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The truism that the result obtained from a given drug often depends upon the exact manner of its employment especially applies to chromic acid in this connection. Its crystals are fused upon the point of a probe, in contradistinction to grooves, cups, etc. Its usefulness depends upon the affinity of the salt for moist papillomatous tissues. These tissues are effectively attacked and removed by this escharotic with unvarying constancy. The crimson chromic-acid crystals, so called, are, more properly speaking, a trioxide of chromium, CrO_3, its combination with water forming the acid CrO_3OH_2,* which is immediately reduced in the presence of organic matter, the resultant salt being the sesquioxide of chromium, Cr_2O_3.

Chromium trioxide is highly deliquescent, immediately dissolving when applied to moist papillomatous tissues in small quantities. I shall, in deference to general usage, designate the salt chromic acid. The organic matter is apparently dissolved by the oxidizing action of the acid, but, when applied to a limited area, its action ceases with the conversion of the salt into the chromium sesquioxide, which, as regards organic matter, is an insoluble and inert salt. This self-limiting action is a characteristic possessed by few of the other escharotics, and renders its application as a caustic safe, painless, and yet efficient.

Although chromic acid applied in small quantities at short intervals is capable of exerting a marked progressive destructive effect upon papillomata, its action upon the normal laryngeal mucous membrane is feeble and of brief duration. Its restricted activity in this respect constitutes an additional recommendation as indicating the perfect safety with which it can be carried into the cavity of the larynx.

A pronounced opinion against the use of chromic acid exists in the minds of some laryngologists. This feeling is well expressed by Dr. Morell Mackenzie, in his celebrated work on "Laryngeal Growths," in the following sentence: "Since 1862 mechanical methods have almost entirely superseded the local application of caustics."† In a subsequent paragraph he includes chromic acid in the list.

That such a prejudice should exist does not seem surprising when we consider the manner of its employment by certain operators. Every other consideration seems to have been sacrificed to

* Fownes, Witthaus, *et al.*

† See, also, Morell Mackenzie, "Diseases of Throat and Nose," vol. i, p. 320, 1880.

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obtain the speedy action of this and similar escharotics. As a consequence, most of the instruments devised for the laryngoscopic manipulation of chromic acid are arranged to contain the salt in large quantities, as, for instance, Tobold's, Türck's, and Mandl's applicators, Navratil's platinum cup, Fauvel's pincette, etc.

Hence we find some authorities pronounce unsparingly against the use of the salt applied in substance to papillomatous tissues; others advise it, but warn the operator of the constant suffering following its application to the larynx; and, again, others recommend escharotics only after a preliminary tracheotomy.* In opposition to these views, Lewin goes so far as to always recommend the trial of cauterization for the removal of *small laryngeal growths* before resorting to cutting instruments, claiming that even in the event of failure no harm results, and that the throat by this practice better tolerates the employment of other instruments. Special writers, however, seem more inclined to limit the employment of the salt to the secondary purpose of preventing the reformation of laryngeal growths.† It is therefore evident that the salt, when used alone, subserves a double purpose—namely, *it enucleates the growths and prevents their recurrence.*

The recognition of the fact that benign papillomata, in their regrowth, sometimes assume the character of a veritable epithelioma,‡ enhances the value of chromic acid as an anti-repullulative agent. Although chromic acid and nitrate of silver, developed among laryngoscopic methods side by side, have been indiscriminately employed to obtain identical results, their action as escharotics has been shown to be dissimilar. A peculiar irritating action exerted by the silver, resulting sometimes in an actual increase of tissue,# is not possessed by the chromium salt. Furthermore, nitrate of silver has a tendency to spread when applied to mucous membranes.‖ The most important difference, however, between chromic acid and nitrate of silver is the deliquescent character of the former, compared with the more tardy solubility of the latter, in the presence of moisture.

The introduction and employment of chromic acid for the re-

* G. Buck, M. D., "Transactions of the American Medical Association," vol. i, 1853.

† Dr. V. Bruns, "Polypen des Kehlkopfes," p. 7, etc.

‡ C. Wagner, "Intra-laryngeal Growths," "Medical News," February 3, 1883.

\# F. H. Bosworth, M. D., "Archives of Laryngology," vol. ii, p. 116.

‖ Türck, "Klinik der Krankheiten des Kehlkopfes," p. 564.

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moval of abnormal tissue formations is by no means recent. The late Dr. J. Marion Sims, who was present on an occasion when my method was employed, remarked that he had used chromic acid as a caustic in the early part of his professional career.

As has been already hinted, my plan is to *apply chromic acid in small quantities at short intervals.* This is best accomplished by means of a probe upon the point of which a tiny crystal of the salt has been fused. The probe should have a correct laryngeal curve. Its point, previously heated, is applied to a particle of the chromium crystals about as large as a millet-seed, or, speaking more precisely, a quantity varying in the neighborhood of one sixth of a grain. The crystals fuse and adhere to the heated metal, giving off chromium fumes. This fuming, which might result in the reduction or evaporation of the melted crystal, should be quickly interrupted by placing the probe near the palm of the hand and vigorously blowing upon it. The firmly adherent red bead is distinctly visible upon the dark surface of the chilled probe, and can only be displaced by vigorous friction.

As soon as the patient has properly withdrawn the tongue, the laryngoscopic mirror is placed in position and steadied against the side of the mouth. The probe, grasped in the operator's right hand, is pressed against the opposite side of the mouth, and, with this point as a fulcrum, is steadily advanced over the tongue until its point appears pictured in the laryngoscopic mirror. The angle of the laryngoscope is gradually altered as the applicator advances, in order to keep the probe's point constantly toward the center of the mirror. When the red dot on the probe's point is observed to be almost in contact with the growth, it is suddenly projected upon it by gently depressing the handle of the applicator. The chromium crystal vanishes from the end of the probe, reappearing as a minute white speck upon the point of application. This eschar soon assumes a yellow hue, growing darker as it gradually exfoliates. The sphacelated fragments are expectorated, leaving minute depressions upon the surface of the growth. In this way the papillomatous tissue is removed piecemeal. The irregular projections resulting from this chiseling process are leveled by successive applications of the acid, and all the parts can be carved with the caustic, according to the operator's fancy. The curve of the probe has much to do with its proper manipulation, since its successful introduction into the larynx depends more upon precision than dexterity. As the caustic is guided to its goal by directing the end of the probe, the wire should be

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curved to keep this objective point constantly in view. A circumferential curve accomplishes this most efficiently, the point of impingement being the intersection of the radius with the arc of a circle at the base of the quadrant. Thus the instrument is readily directed by a simple curvilinear motion. A curvilinear bend, however, is not adapted to every laryngo-oral axis; in these exceptional cases the ordinary elbow-angle must be adopted.

The use of the uncovered probe is sometimes attended with more or less difficulty. This difficulty is principally due to the unintentional deposit of the application upon the base of the tongue and the neighboring structures, or to involuntary closure of the glottis. Both of these obstacles have been overcome by the little instrument shown in Fig. 1. It accomplishes the first indication by protecting the chromium crystal until it reaches the point of application, and the second by surprising the larynx.

The instrument consists of a cannula containing a movable metallic rod, the latter being continued in the form of a spiral spring at the curved portion of the tube. A probe-pointed piece of wire is riveted to the extremity of this spiral to preclude the possibility of the accidental displacement and lodgment of the caustic-carrier in the larynx. The spring also serves as a buffer to deaden the force of the probe's impact against the growth.

The handle of the applicator is excavated to receive a spiral spring, acting upon the movable rod. A detent, *d*, drops between the teeth, *t*, and sets the spring. The nut, *n*, serves to regulate the tension of the spring. When not in use, the stylet, *s*, projects beyond the hood, thus permitting fusion of the chromium crystals upon it as with the ordinary probe.

When ready for use, the probe's point is drawn within the tube by traction upon the milled nut, its return being prevented by the catch. The applicator can now be introduced without risking the loss of the application upon accidental points of contact.

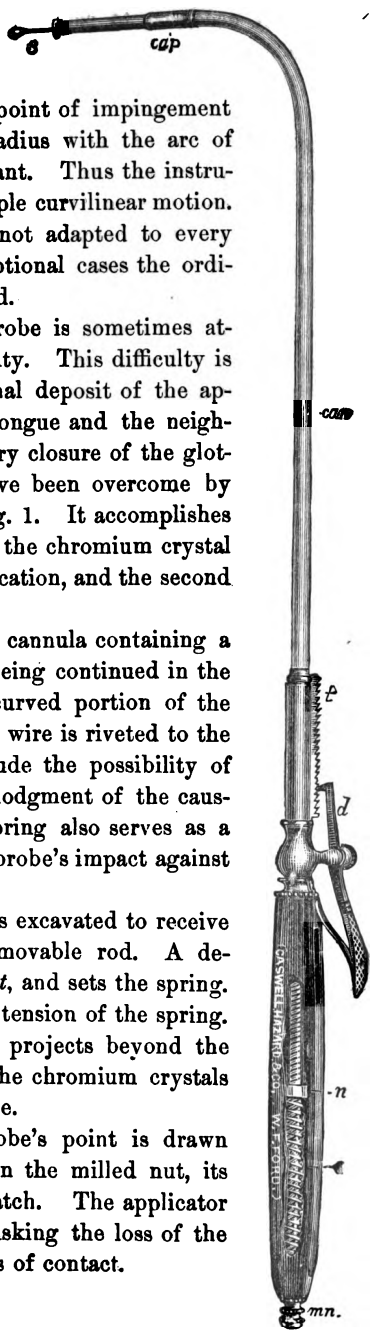

Fig. 1.

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It is not necessary to carry the end of the instrument directly upon the growth, since the probe-point is propelled some distance beyond the end of the tube, thus bridging over the interval of alarm.

A special feature of the instrument is the trigger device. This contributes the utmost steadiness, and, therefore, precision in manipulation, by securing instantaneous action with the smallest expenditure of force. The extremity of the probe is made of flexible metal, to permit its fixation at any angle. Mr. W. F. Ford, of Caswell, Hazard & Co., is the original manufacturer of this instrument.

The general utility of this method for the treatment of laryngeal growths is apparent when we reflect that more than fifty per cent. of their number are papillomatous in character.

I have entered somewhat minutely into the details of my operation, more to prevent failure due to their neglect than from any personal inclination.

Illustrative Case.—In January, 1882, I met Miss F., thirty years of age, of Norwalk, Conn., in consultation with Dr. R. G. Nolan and Dr. E. R. Reilly.

The patient first noticed her voice to be affected in October, 1881. The hoarseness and difficulty in breathing slowly increased, and, at the time of our examination, she spoke in a strained and scarcely intelligible whisper. We discovered by laryngoscopy that the lumen of the larynx was almost entirely occluded. The laryngeal ventricles were obliterated, and the mass, as was afterward shown, projected far within the cavity of the larynx. It presented the usual appearances of a papilloma.

Fig. 2, copied from a sketch, gives an idea of its size and shape. The dark triangular outline near the right arytenoid prominence

Fig. 2.

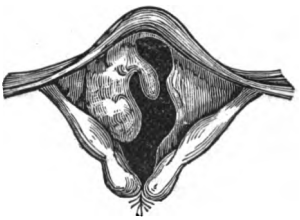

Fig. 3.

marks the only available breathing space. A tentative test, made with a probe, provoked a most intense inspiratory spasm, the intervals being prolonged almost to the point of suffocation.

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Subsequent experiments resulted in similar manifestations. The patient would not listen to a proposition involving tracheotomy.

While in this dilemma, the idea occurred to me of utilizing chromic acid as an escharotic, applied frequently and in small quantities. The acid was therefore made use of in the manner explained.

I was at once reassured by the good behavior of the larynx. The gentle touch of the probe, laden with the chromium salt, produced neither cough nor spasm.

Applications were made daily, sometimes two or three at each sitting. The respiratory chink gradually widened under the eroding action of the escharotic, and on February 14th the discordant whisper was replaced by a loud, raucous voice. This effect was really accomplished in five days, there being an interruption of nine days, for which the patient was not responsible.

Fig. 3 represents the appearance of the growth on February 22d, shortly after the return of the patient's voice.

Fig. 4, copied from a sketch taken just after the completion of the treatment, March 3, 1882, exhibits the irregularly cicatrized ventricular bands, and the shape and size of the supra-glottic aperture. At this time the patient claimed she spoke and sang as well as ever.

Fig. 4.

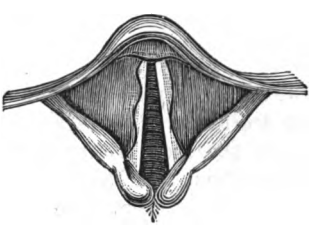

Fig. 5.

Fig. 5 was photographed from a sketch taken March 4, 1884, two years after the completion of the treatment. It shows the relation of the true cords and ventricular bands, and the slight changes of a beneficial character which occurred in that time.

I do not wish to be understood as confining myself to this measure for the removal of all laryngeal papillomata, although it was the only one employed in the case described. On the contrary, I have not hesitated to employ it in conjunction with the forceps or snare. I believe that a majority of those present will agree that, in view of the facts just given, the opprobrium attached to this beneficent measure is unjust, and largely due to misapprehension or misuse.

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No observations can be said to have acquired the honor of established facts until they have been verified by long-conducted and repeated experimentation. I have endeavored to constantly keep this in view while formulating these results, being well aware that bare assertion based upon insufficient data is scientifically valueless.

Conclusions.—In recapitulating, I submit the following propositions:

1. Trioxide of chromium, or so-called chromic acid, is valuable as an escharotic on account of its self-limiting action.

2. It affords a safe and reliable means for the removal of large and small soft laryngeal growths.

3. It not only removes the growth, but also prevents its recurrence.

4. It is best applied fused upon a probe.

5. Its application is facilitated by an instrument devised to act as a guide, protector, and regulator.

6. Its use in the larynx is not necessarily attended with pain or spasm.

7. It offers a substitute for tracheotomy and thyrotomy in certain cases where these measures have been adjudged necessary.

Discussion.

Dr. Cohen.—It is so long since I have employed the agents mentioned in the treatment of these affections of the larynx that I have almost forgotten the fact. Everything depends upon the manner of making the application, and Dr. Jarvis's paper will give us confidence in trying the method again. The results of old methods certainly are not very encouraging. In a case like the one described I think the forceps should be applied and as much as possible of the growth removed, after which the caustic should be applied. But even then I should not expect to get such quick results as Dr. Jarvis has obtained with the caustic alone.

Dr. Roe.—I have used the caustic, but have not attempted to remove the whole of the growth by that means alone, as Dr. Jarvis has done. An interesting case of papilloma of large size came under my observation about a year ago. The patient had been aphonic about eight years, and her physician had treated her for chronic hoarseness. I found a papilloma occupying the anterior two thirds of the right vocal cord. This I removed in part with the forceps, and afterward she could speak fairly well. At the next sitting I removed the whole growth except the base, to which I applied the chromic acid.

Dr. Roe and Dr. Seiler described an instrument similar to the one

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mentioned by Dr. Jarvis, which they had used in the removal of these growths.

Dr. INGALS also described an instrument which he had employed for making applications to the larynx. He had used chromic acid in cases of cancerous disease without any bad result.

Dr. G. W. MAJOR, of Montreal.—I think the principle of treatment of growths by means of chemicals depends upon their affinity for water. It is necessary to use them in small quantities and with much care, as they are difficult to handle. Indeed, in children it is almost impossible to employ them at all. For a year I have been in the habit, in the case of children, of making applications of absolute alcohol to the growth by means of the spray, and the results have been very successful, resulting irritation being but slight, while the tumor has been caused to shrivel.

Dr. JARVIS, in closing the discussion, said: Instrumental interference in my case was out of the question because of the danger of spasm of the glottis. The seriousness of this accident is likely to be in proportion to the size of the laryngeal growth, and to depend somewhat upon its location. If it extends some distance into the larynx, the removal of the upper portion of the growth would simply produce intense spasm and possibly suffocation. If the location and size of the growth were such as to make the occurrence of spasm improbable, I would not hesitate to adopt the method suggested by Dr. Cohen.

PRESENTATION OF INSTRUMENTS.

DR. DOUGLAS presented two powder applicators, invented by himself.

Dr. JARVIS presented a laryngeal snare.

Dr. MACKENZIE presented a self-retaining nasal speculum, and also announced a proposed method of illumination of the nasal cavities.

Dr. SEILER said, with regard to illumination of the nasal cavities by the Edison incandescent light, that he had tried it, burned himself, and would not think of trying to use it on a patient.

Dr. INGALS presented an instrument designed for carrying the wire loop of a snare up behind the palate in removing naso-pharyngeal growths. The instrument was shaped much like an ordinary post-nasal forceps, but on the upper surface of the blades were slides, which fixed the wire in notches at the extremity of the blades, while they were being introduced and opened out over the growth, and allowed the release of the wire after it had been fixed in proper position, the snare attached, and the loop partially tightened. He had found the instrument peculiarly serviceable in removing large naso-pharyngeal tumors.

In the case for which he had the instrument constructed he had worked patiently for about three hours to apply first the steel and afterward the platinum wire, and had been obliged to give it up; but he had succeeded in about two minutes after he procured the instrument.

Dr. SAJOUS presented three new instruments—a modification of the

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Mathieu tonsillotome, the principal features of which are three sizes of blades, applicable to the one handle, and greater facility in cleansing; a septum forceps to which any shape of punch or blade can be attached, and fulfilling the objects of the two forceps heretofore required in cutting operations; a new uvulatome for posterior oblique amputation—and said: The tonsillotome herein described is somewhat smaller than Mathieu's, and the general conformation of the blades is preserved; but, instead of being furnished with a side-shaft for the fork, the spear which takes the place of the latter is attached to the main shaft by means of a thumb-screw. The lower edge of the spear is straight throughout one half of its length, then oblique, and rests in a grooved guide-screw which passes through a slot in the shaft and is fastened to the blade. When in action, it perforates the tonsil and draws it out without causing the jar occasioned by the sliding-screw of Mathieu's. A spear is made to replace the fork, to avoid the difficulty generally experienced in separating the cut-piece from the latter; it holds it sufficiently to prevent its dropping into the throat, and can be easily withdrawn when partly in the tonsil, should a calcareous concretion be met with.

The thumb-ring is screwed on the main shaft, bringing it in a direct line with the finger-rings. By this arrangement the equilibrium of the instrument is maintained during the operation, whether operating on the right or the left tonsil.

The main shaft is not continuous with the blade-rings, as in Mathieu's; they are separate, and the latter are furnished with rods which fit and move easily in longitudinal grooves extending an inch and a half along

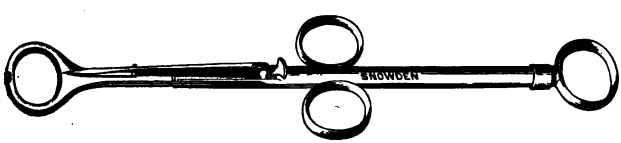

Fig. 1.

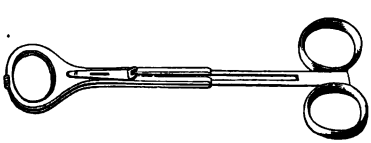

Fig. 2.

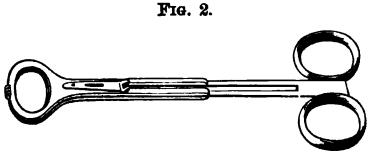

Fig. 3.

the side of the shaft. By this arrangement any size of blade or ring can be adjusted to the shaft, the three sizes presented having served the

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inventor in twenty-seven operations, and in each case the rings fitting tightly around the tonsil, a desideratum for a neat operation and an even surface.

As shown in Fig. 1, the instrument is ready for the operation, the manipulation being the same as with Mathieu's. When the thumb-ring and finger-rings are approximated by the operator, the spear enters the tonsil until the beveled end of the main shaft slips under a small spring situated near the grooved guide-screw, from which a pin reaching down to the blade protrudes. The spring being raised, the pin is lifted out of the hole in the blade, setting it free, and the knife, following the motion of the fingers, cuts through the tonsil.

One of the annoying features of tonsillotomes in general is the difficulty attending their cleansing. Especially is this the case in Mathieu's, a screw-driver being necessary to disengage the blade from the shaft and blade-rings. In the new instrument, traction on the blade-rings with the left hand will cause them to slip half way out of the shaft until a pin projecting from the lower surface of one of them becomes engaged in a

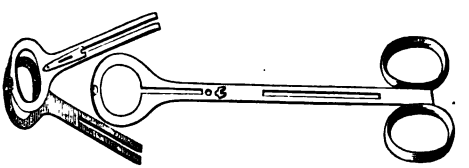

Fig. 4.

"safety" groove near the end of the knife. The finger-rings are now pushed away from the thumb-ring, thus causing the blade to occupy the position it held before the operation. The rings being thus allowed to slip farther out, they become disengaged from the shaft, leaving the blade exposed.

The tip of the spear is now turned aside by lifting it out of the grooved guide-screw and the piece of tonsil taken off. Each exposed part can be cleansed thoroughly and readjusted in a few seconds. If necessary, the whole instrument can be taken apart by merely unscrewing the thumb-ring.

Dr. Sajous then showed a septum forceps, and said: This forceps, in general shape and size, is like Adams's, but the blades are separable, a turn of the thumb-screw, like that in an obstetrical forceps, causing them to fall apart. This enables the operator to introduce one after the other into the nostrils, and to lock them when in proper position. Instead of forming a part of one of the blades, the knife or punch is independent and can be adjusted to it by passing the shouldered pin with which it is furnished, as shown in Fig. 5, through a hole near the end of the instrument. This enables the operator to use any shape of knife he may think adaptable to his case.

The knives can be turned in any direction, according to the longi

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tudinal axis of the deviation, and but one forceps becomes necessary for punching and straightening, the knife being easily taken off.

FIG. 5.

The knives and punches shown in Fig. 6 are a small oval punch to perforate the septum, a Steel's punch, an elliptical punch with diverging blades, to cut off sharp bends of the cartilage and reduce its elasticity

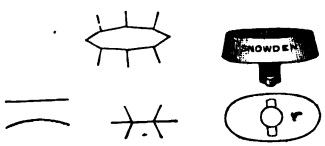

FIG. 6.

when being straightened, and two small blades—one curved and one straight—with which any shape of figure or cut can be made in the septum. For instance, the shape of saw-teeth in a redundant septum can be made by alternately raising and lowering the handle of the forceps. The sharp ends will overlap and give a result which could not be obtained with a small punch.

Dr. SAJOUS also showed a uvulatome and said: The uvulatome consists of a pair of strong scissors with the handles slightly bent. Its lower surface is armed with a pair of toothed claws, the stem of which is connected with the handles by means of two little arms. These being attached loosely, the claws have free longitudinal motion, guided by the pivot-screw of the scissors, and kept in position by a cap which not only serves that purpose, but also approximates the toothed edges of the claws by the resistance it offers to their outer edge.

The instrument being held with the palm of the hand directed toward the operator—that is to say, with the thumb and finger passed through the rings from below upward (the bend being just sufficient to prevent them from interfering with the line of vision)—it is introduced closed into the mouth. As soon as the point has reached the uvula, the rings are separated, and the organ hangs between the teeth of the claws. The rings being now approximated, the claws close on the uvula *before* the blades touch it, hold it fast, and bring it forward by bending it at its base. The scissors cutting it in that position, the cut surface is oblique and posterior. When food is swallowed the horizontal surface obtained with other instruments is exposed to the bolus, and scraped and kept sore by it for several days. With the posterior oblique surface obtained with

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this instrument, the bolus only touches the anterior surface of the stump, the cut surface resting against the pharynx. The healing process is more

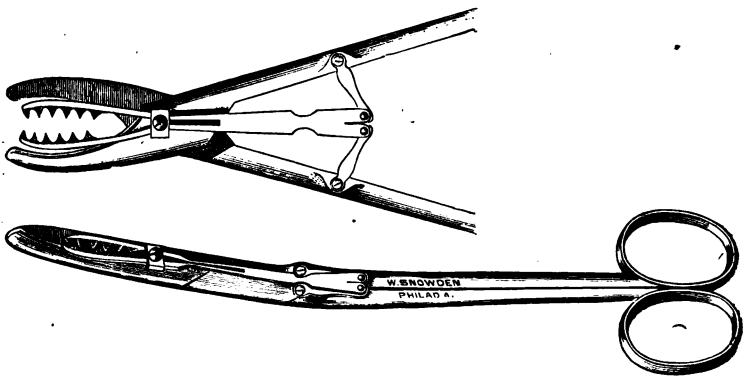

FIG. 7.

rapid, and a better stump is obtained. Slipping of the uvula between the blades is impossible, and the cut is always complete.

Dr. DELAVAN called the attention of the association to a new method for the alimentation of patients suffering from dysphagia, and presented an instrument designed to facilitate the feeding process.

The essential principles of the method were (1) the use of a tube of small caliber instead of the ordinary stomach-tube, and (2) the introduction of this tube, not into the stomach, but simply below the pharyngeal constrictors, or beyond the seat of the difficulty. The instrument consisted of an ordinary conical-bottomed soda-water bottle, furnished with

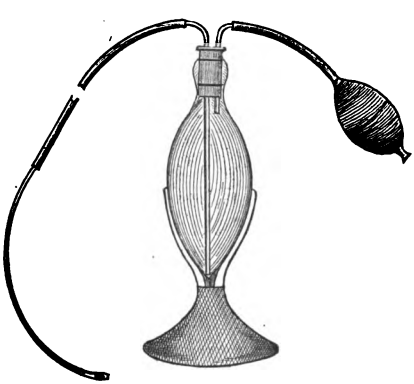

FIG. 8.

an India-rubber stopper. In the latter were two perforations, through each of which was passed a glass tube, bent just outside the cork at a

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right angle. One of these was short, the other long enough to reach the bottom of the bottle. To the short one was attached a Davidson air-compressor. To the other a flexible rubber tube, connected with an English flexible woven catheter, in size from No. 8 to No. 18. The catheter having been introduced into the œsophagus, the nutritive fluid in the receiver was forced through the tube by compressing the air in the receiver by means of the rubber bulb.

Dr. Donaldson remarked that he had found the most convenient instrument for introducing food into the stomach to be the fountain syringe.

Dr. Seiler and others offered certain theoretical objections to the tonsillotome and the uvulatome presented by Dr. Sajous but Dr. Sajous replied that, practically, the objections did not hold except the one with regard to the curve of the handles of the uvulatome, and that would be corrected. He had employed the instruments in a number of cases with entirely satisfactory results.

Dr. Cohen said, with regard to deformity of the nasal septum, that he had not found instrumental treatment of much value. Lately he had been in the habit of dilating the alæ, putting in a nasal plug of cotton, and leaving it there a day, during which time it formed a mold of the cavity. He then had a mechanic form a wooden plug from this, which the patient wore an hour or two every day for some time. The results had been very satisfactory. In two cases, however, the wooden plug had given rise to considerable ulceration of the septum, but, by taking the plug out and introducing cotton, the ulceration had disappeared.

At one o'clock the session was adjourned.

Afternoon Session.

Paper.

PERMANENT UNILATERAL PARALYSIS OF THE LARYNGEAL ABDUCTORS FOLLOWING CEREBRAL EMBOLISM; A UNIQUE CASE.

By D. BRYSON DELAVAN, M.D.

IN presenting the history of the case indicated in the title of this report the intention was to bring it before you, not alone on account of its extreme rarity and of the interest which always attends any scientific novelty, but more particularly because it seemed to represent an excuse for a renewal of the much-worn discussion as to the question of abductor paralysis in general, and as well to extend the allurement of a possible clew to some of the hidden mysteries of that most unintelligible condition.

A review of the literature of abductor paralysis, however, has

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quickly recalled the fact that we are to-day in as much uncertainty and doubt regarding many points in its pathology as ever, and we are forced to recognize that, with our present want of light, a case presenting the features of the one at hand is apparently beyond the possibility of certain and definite explanation. It is offered, therefore, as the simple relation of a curious fact, which, in the interest of scientific progress, should be added to the already existing knowledge of the subject, in the hope that accumulation of information may some day result in a full solution of the problems with which it is associated, and as the beginning of further research in the same direction. The following is the history of the case. As to its infrequency, Nothnagel, in his article on Cerebral Hæmorrhage, in von Ziemssen's "Encyclopædia," vol. xii, p. 116, says: "Unilateral paralyses of the vocal cords or of the pharynx are exceedingly rare,' while under the head of cerebral embolism it is not alluded to.

Mr. W., aged sixty-nine years, American, widower, retired merchant. Family history in the main excellent, the patient coming of a stock remarkably long-lived and sturdy, but affording evidence in some of its branches of the tuberculous and the rheumatic diatheses. Patient has been a man of splendid physique and strong constitution, of regular habits, and strictly temperate in the use of alcoholics, but immoderately addicted to tobacco. Since middle life has suffered greatly from rheumatism, and has rapidly accumulated fat, but gives no history or indication of any other diathesis. He is right-handed. In 1876 he had an attack attended with vertigo, partial insensibility, and numbness, but without any distinct paralysis.

On December 18, 1877, he was again attacked, this time with a well-marked apoplectic seizure. Although complete insensibility was at no time present, there was intense pain in the back of the head, and in the nose on the left side, numbness and impairment of motion of the left arm, side, and leg, almost total inability to swallow, and, finally, a remarkable change in the quality of the voice, which, from having been full, deep, and sonorous, was reduced to a cracked, piping, and uncertain tone, which rendered its use almost impossible. Articulation was also impaired, the patient for months afterward being obliged to pronounce each syllable separately, speaking slowly and with difficulty. There was at no time, nor to any degree, aphasia. There was distinct ptosis, with paralysis of the left side of the face and tongue.

After continuing for two or three days, the general symptoms began to subside, and a slow but pretty steady improvement continued for many months, with regard to all except the voice, the leg first regaining its normal condition, then the arm, and, finally, the face. In the voice, however, there was little apparent change for some time, but by degrees it became

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more readily controlled and less discordant, although the high-pitched quality has persisted up to the present time, together with loss of phonating power.

In 1882 permission was given to examine the larynx, when it was at once made evident that there was a complete paralysis of the left vocal band, the position of which was in the median line.

The larynx was remarkably easy of demonstration, and the diagnosis was afterward confirmed by my friend, Dr. Clinton Wagner, who kindly consented to examine the case in consultation.

Laryngoscopic examinations, made at intervals subsequent to 1882, have demonstrated no change in the position of the cord. To summarize briefly; in a case of apoplexy, due, evidently, to embolism of the middle cerebral artery, in which paralysis in the region of the pharynx and larynx was especially well marked, all of the paralytic symptoms have almost entirely disappeared except those relating to one set of muscles—namely, the laryngeal abductors of the affected side—and these have continued paralyzed, without any apparent change, for a period of seven years.

From the foregoing record it is evident that the origin of the laryngeal paralysis, together with that of the other muscular groups, was central. Simultaneously with the attack of hemiplegia the voice was lost. Consequently, the causes of both were probably identical. In other words, a lesion occurring in one and the same region of the brain was responsible for both. The diagnosis of cerebral embolism or endarteritis is based, with justice, upon the gradual onset of the attack, the absence of complete unconsciousness, and the steady disappearance of the hemiplegia, together with the fact that the patient has since had slight attacks of vertigo, with numbness, heat, and formication of the side first affected. From the seat of the paralysis resulting from the principal attack, it is more than probable that the middle cerebral artery was the vessel affected. We have, therefore, embolism, anæmia of certain brain-centers, gradual re-establishment of the circulation, with corresponding disappearance of the paralytic symptoms, and, finally, permanent paralysis of the most important, and by far the most active, set of muscles in the larynx. Admitting the possible existence of a ganglionic center for the larynx, the results above described may be explained upon the basis of one of the three following propositions:

I. That broadly formulated by Semon—namely, that "there is a proclivity of the abductor fibers of the recurrent nerve to succumb to pathological influences affecting the roots and trunks of the motor nerves of the larynx."

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II. That there is an inherent tendency in the cerebral motor center for the larynx to degenerative processes from which the neighboring parts of the brain are exempt.

III. That the ceaseless activity of the abductors is maintained by the expenditure of an amount of nervous energy greatly in excess of that required to stimulate the opposing muscular group—i. e., the adductors—so that a central lesion, sufficient merely to weaken the energizing power of the neighboring centers, might result in a virtual paralysis of the abductors, sufficient force not being left them to oppose their fellows of the opposite group.

The explanation of the present case will probably be found to lie within the limits of the two last propositions, and to be based upon the following ground: Compensation for the nutrition withdrawn by occlusion of the affected artery was established by the development of the collateral circulation of the region to an extent sufficient to furnish a supply of nervous energy adequate to all ordinary demands, except in the case of the abductors, in which, the demand being excessive, the diminished nerve-supply failed to furnish a stimulus capable of enabling them to maintain their normal relation of adductor opposition, and thus producing the feebleness, irregularity, and uncertainty of tone observed in the voice, and, laryngoscopically, the position of the vocal band as in abductor paralysis. It is not impossible, moreover, that the special tendency of the laryngeal center to degenerative changes may be due to some distinct peculiarity in the distribution of the arterial branches supplying the part.

1 East Thirty-third Street.

Discussion.

Dr. Knight remarked that this subject was a very obscure one. He had once seen a patient who had fallen down stairs and struck on the top of the head, who afterward noticed an alteration in his voice. Upon subsequent examination, the only symptom or sign resulting from the accident was paralysis of one abductor. It was one of the most striking cases in favor of independent nerve-supply of the abductors. At any rate, it showed that there was some lesion which affected the abductor without affecting the adductor. It was not very likely that there had been any injury of the abductor muscle itself.

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Paper.

REPORT OF A CASE OF STRICTURE OF THE ŒSOPHAGUS.

By RUFUS P. LINCOLN, M. D.

THE patient whose history furnishes the subject of this report was fifty years old, a native of Hayti. He arrived in this city the last of June, 1883, and was referred to me by Dr. Otis. He was then suffering from aphonia, a moderate amount of dyspnœa, and dysphagia, with regurgitation of food into the nares, and vague pains in the neck, sometimes shooting up to the ears, and in the upper part of the chest.

These symptoms, according to the patient's account, had been present, with varying degrees of intensity, during the previous eighteen months.

He had spent about half his life in Europe. Always a good liver, he was temperate in all things but the use of tobacco. For many years he had smoked from fifteen to twenty strong cigars daily, occupying the interval of smokes with an occasional pinch of snuff.

In the summer of 1882, while traveling in Switzerland, in consequence of exposure to a cold rain at night at a railroad station, he contracted a severe attack of rhinitis, pharyngitis, and laryngitis. Skillful treatment in Paris soon relieved him of the principal symptoms of this attack.

He at this time experienced the first symptoms of obstruction to breathing, which was then pronounced asthma. There was also some difficulty in swallowing. He was never afterward entirely free from this "ball in his throat," as he described it.

On arrival at Cape Hayti, in September, 1882, his disease was pronounced "syphilitic laryngitis," and he was put on a course of four grammes of the iodide of potash daily. He was also treated locally, by means of the brush, with tannin, alum, and nitrate of silver, one after the other. He insisted that this treatment always aggravated his distress, and kept the pharynx looking like "raw beef-steak." His voice gradually became hoarse until, March, 1883, when he was aphonic, and much troubled by choking when he attempted to swallow anything.

On inspection of the neck, there presented anteriorly a general fullness, extending from the cricoid cartilage down to the sternal notch. The thyroid body was enlarged, and on either side, extend-

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ing under the edge of the sterno-cleido-mastoid muscles, there were enlarged glands that were movable, one on the right side near the clavicle being painful to pressure, and more firmly fixed than the others.

On examining through the mouth, the pharynx was found congested, the epiglottis red and thickened, the whole larynx stenosed, especially on the left side, where the arytenoid was so much hypertrophied as to be immovable on attempted phonation, thus preventing action of the corresponding vocal cord, while the right approximated the median line.

On account of the extreme sensitiveness of the pharynx and larynx, the œsophagus was not explored with sounds, but an obstruction was readily located on auscultation while the patient swallowed water, opposite the seventh cervical and first dorsal vertebræ. With care, liquids and finely masticated food could be swallowed, though this often induced coughing and forcing of food into the nares.

The patient was at this time under observation about a month, during which time there were two attacks of a chill, followed by fever, repeated daily for three days, and yielding to full doses of quinine.

The stenosis of the larynx improved, so that the voice was normal and respiration no longer embarrassed; swallowing was also better performed, so that food other than liquids, if thoroughly masticated, was freely taken. The pharynx and epiglottis resumed their natural appearance; exteriorly the general fullness of the neck and the thyroid gland, above referred to, had subsided, the enlarged cervical glands, however, being but little diminished in size, though they were perceptibly softer, smaller, and no longer tender to pressure.

The patient was again seen in September, he having spent the interval comfortably, gaining flesh and strength, in Richfield Springs. There had been, however, within a short time a gradual recurrence of the former symptoms, except that the voice was unchanged. During the last week in September the quantity of food swallowed amounted to scarcely anything, and the respiration became alarmingly difficult (though there was no aphonia), so that the skin was somewhat cyanosed, and there was some delirium. These urgent symptoms in respiration yielded after two or three days, but not so the obstruction to deglutition. Attempts to pass œsophageal sounds and bougies, even the smallest, were not successful in penetrating entirely through the stricture, and were always followed by much

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inflammatory reaction. Dr. Otis was present and participated in several of these efforts.

November 3d I passed a metallic sound entirely through the stricture, but so much inflammation followed that the attempt was not repeated till November 13th, when Dr. Weir was present and passed a bulb-pointed catheter, size No. 22, with little difficulty. One goblet of milk-punch was injected into the stomach, and an hour later this was repeated, the catheter remaining in the œsophagus in the mean time.

The pulse at this visit was 110, and there was no rise in temperature. After chatting an hour, the patient went to sleep and slept undisturbed three hours, till 12 P. M. On waking he was much agitated, and complained of palpitation and rapid breathing. I saw him at 5.30 the following morning, and found the pulse 160, and the respiration 60 and panting. Some whisky and water was swallowed, and an enema of beef-peptonoid with whisky administered, but the patient expired about 9 A. M.

During the last six weeks of his life the patient was chiefly nourished by three nutrient enemata daily, inunctions of cod-liver oil, and hypodermic injections of cod-liver oil, amounting to from a half ounce to one ounce daily.

An autopsy was made, with the assistance of Dr. C. D. Scudder, six hours after death. Rigor mortis well marked. Emaciation not extreme. Of the organs examined, the heart, lungs, stomach, and liver appeared normal. The larynx, trachea, and œsophagus I here exhibit.

Specimens of the morbid tissues were sent to Dr. Heitzman and Dr. William H. Welch, both of whom unite in diagnosticating medullary cancer. The following is the substance of Dr. Welch's report.

Cancerous deposit found in the anterior wall of the œsophagus, near its commencement, and the infiltration slowly spread, until about two inches and a half of the surface were involved. This deposit spread laterally, and by contiguity the deep portion of the œsophageal wall was also infiltrated with cancerous matter, which subsequently affected the posterior and lateral walls of the lower part of the larynx and upper part of the trachea, giving rise to the numerous nodules seen there; these have coalesced to a great extent, especially posteriorly. The cervical lymphatic glands shared in the disease, as is usual with cancer, and infiltration took place into the tissues surrounding them, involving the vagi nerves.

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The dysphagia and aphonia were produced by local cancerous material in the œsophagus, larynx, and trachea, and by the diffused cancer that involved the laryngeal and œsophageal branches of the vagi. Death finally resulted from affection of the cardial branches by the same cancerous deposit.

Discussion.

Dr. Roe—I have left a pharyngeal tube permanently in the œsophagus of patients suffering from cancerous stricture, in one instance having allowed it to remain for over one hundred days without removal. Since other than malignant cases have been mentioned, I will refer to two cases in which I have performed internal œsophagotomy with success. Several more, in the hands of other operators, are on record. In my first case the stricture originally was of large size, and was kept open for over a year by the passage of bougies. Finally, however, dysphagia became so serious that I performed internal œsophagotomy. The patient was able immediately to swallow without difficulty. Bougies were passed for about four months, but, no tendency to recontraction having been shown, their use was discontinued. The operation was done about eighteen months ago.

The other case was that of a woman, and the operation was successful. Where appropriate, I think internal œsophagotomy should always be preferred to gastrostomy. I believe there are only two or three patients now living who have survived gastrostomy as long as one or two years.

Dr. Knight—I think that before resorting to gastrostomy we should bear in mind the fact that the patient must afterward lead a very miserable existence, and that, in the case of malignant disease, life could be prolonged but a short time any way. I would not resort to the operation unless there were some special reason for prolonging life.

Dr. Donaldson—I can not think it necessary to resort to so serious an operation as gastrostomy in cases of stricture of the œsophagus from adhesive inflammation resulting from caustic fluids. In the case of a child, two years of age, who swallowed concentrated lye, and in whom, two weeks later, it was found that there were two strictures of the œsophagus—one about the level of the seventh cervical vertebra, the other near the cardiac orifice of the stomach—soft œsophageal bougies were introduced, more or less continuously, for over two years, the œsophagus being thereby kept open. In another similar case I would keep the œsophagus open by allowing a perforated tube to remain in, as has been done by others. Of course, no force should be used in introducing the tube, for fear of rupture.

Dr. Ingals—I consider the plan suggested by Dr. Donaldson a good one in some cases, but it is not always free from danger. I recall the case of a child who swallowed caustic, resulting in stricture of the œsophagus, for which a surgeon passed a bougie several times. On one occasion the

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bougie caused considerable pain, and, the pain persisting, I was called late in the day, and found the child suffering from pneumothorax. Death took place the next morning, and at the post-mortem it was found the bougie had made a false passage, and entered the left pleura.

Dr. DALY—I hope that the next time Dr. Lincoln has occasion to treat a case of this kind he will undertake the operation of gastrostomy, which has been done so successfully in Germany. Some two or three cases of stricture of the œsophagus, due to the swallowing of caustic potash, or other cause, have fallen under my care, and I have regretted that I have not had an opportunity to perform gastrostomy, but I would not hesitate to do the operation in the future.

In closing, Dr. LINCOLN said—In reply to Dr. Roe's criticism that bougies should have been left *in situ*, it should be borne in mind that any attempt at interference with the œsophagus, at least sufficient to pass a sound, was always followed by great inflammatory reaction; moreover, there was a prompt improvement that attended the soothing treatment at first instituted which seemed to justify its continuance.

As to Dr. Daly's suggestion that gastrostomy might have been tried, I wish to say that, while the statistics of operations so far reported give but little encouragement for adopting this method in any case, certainly the sequel in this case shows it would have been useless, death having been due to implication of the cardiac branches of the vagi nerves by the disease.

Paper.

STENOSIS OF THE TRACHEA: THREE CASES.

BY E. FLETCHER INGALS, M. D.

DURING the past year I have treated three cases of obstruction of the trachea, the results of which I think sufficiently satisfactory to render brief histories of them of interest to this association.

CASE I.—J. M., aged about forty-five. I was called to see the patient first in October, 1882. I found him suffering greatly from dyspnœa, with loud sonorous and labored respiration; he was unable to lie down, and moved with great difficulty. The legs and feet were œdematous and painful, and the urine was scanty. Frequent paroxysms of cough and excessive dyspnœa occurred, during which the patient's life was often in imminent danger.

He said that he had been under treatment about eight months for bronchitis and asthma. He had but little fever, and there was no pain except that in the legs. The shape of the chest was normal, but there was considerable falling in of the soft parts during respiration.

An irregular area of dullness could be detected in the upper sternal region and extending about an inch to the left of the sternum.

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Loud sonorous râles, heard best over the lower part of the trachea, were propagated over the whole chest. The lungs themselves were healthy, and the heart and blood-vessels yielded no abnormal signs. No difficulty was experienced in swallowing. The larynx was normal. There was no interference with the function of the recurrent laryngeal nerve, and the upper half of the trachea, which was all that could be seen, was natural in appearance.

The stomach was healthy, and, excepting the small secretion of urine, there was no evidence of disease in the other abdominal organs.

From the seat of the râles and from the symptoms, I was satisfied that the patient's distress was due to obstruction at the lower part of the trachea; and, from absence of all the signs of aneurysm excepting dullness, and from absence of symptoms of the cancerous cachexia, I concluded that the obstruction was due to sub-sternal thickening. This I presumed to be of syphilitic origin, though, owing to the surroundings, I could not obtain the history on this point for several days.

The patient was given hydragogues, cathartics, and iodide of potassium in moderate doses, upon which he improved for a few days, but at the end of a week he seemed in such a critical condition that a consultation was held. At this time, while the young wife was absent for a moment, the patient confessed to having had syphilis seven years previously.

The case appeared hopeless, but it was decided to increase the dose of the iodide of potassium to twenty grains. This was ordered to be taken, with half a glass of water, every sixth hour, alternately with ferruginous and bitter tonics. Anodynes to quiet the cough, and cathartics as needed to keep the bowels free, were also administered at irregular intervals for several days.

The patient soon began to improve, and gradually mended for two or three weeks, when the dose of the iodide was increased to thirty grains, three or four times a day.

The administration of the remedy in these large doses was followed by most happy results, and at the end of two months the patient expressed himself as much better than for many months before; however, about six weeks later, the symptoms of obstruction of the trachea grew worse, and did not yield to the remedy in this dose.

The dose was then increased to sixty grains three times a day, and again rapid improvement followed. Before long the patient was able to leave the house, and subsequently, for several months, he visited me at irregular intervals at my office. He continued most of this time to take the large doses of iodide of potassium.

Finally, hoping for more complete relief, he determined to go to the Hot Springs of Arkansas, where he remained for two or three weeks, at the end of which time a telegram announced his sudden death. He was reported to have died of asthma.

In this case life was undoubtedly prolonged many months by the use of large doses of the iodide of potassium.

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Case II.—A. H. H. came to me complaining of hoarseness, violent paroxysms of cough, and severe dyspnœa, which had troubled him for two months. A careful examination of the chest revealed signs similar to those in the preceding case, excepting that there was no abnormal dullness. The larynx was normal, and the upper third of the trachea, which was all that could be seen on account of a sharp bend, was healthy.

In this case the seat of the râles and obstruction could be ascertained by auscultation to be the lower part of the trachea, but the cause of the obstruction could not be ascertained; however, a history of syphilis, six years previously, induced me to order the iodide of potassium in large doses.

Subsequently this was substituted by the iodide of sodium, the dose of which was increased to one hundred and twenty grains three times a day. The remedy was given at first in doses of forty-five grains each, three times a day, the dose being increased ten or fifteen grains with each succeeding day until the amount of six drachms daily had been reached. This was continued three or four days, and then the drug was suspended for three or four days, when the patient began again with doses of forty-five grains, which were gradually increased as before. Under this treatment he steadily improved, and was soon able to attend to business. At the end of three months he reported himself better than for several months before.

He is still doing well, and taking the medicine part of the time, but the case is not completed. There has been no return of the severe symptoms, and he is able to attend to business regularly.

Case III.—A. P. came to me thirteen months ago, complaining of hoarseness and dyspnœa on active exertion. He was a robust man, weighing about two hundred pounds, and seemed, aside from the foregoing symptoms, to be in the best of health.

Upon laryngoscopic examination, I found a small, conical projection from the anterior part of the trachea in the median line, half an inch below the glottis.

This was three sixteenths of an inch in diameter near the base, about a quarter of an inch in altitude, and was surrounded by a congested and swollen mucous membrane.

The mass itself was of a deep-red color for about two thirds of its altitude, but the remainder, at the apex, was of a yellowish-white color, giving it the appearance of a pustule.

Mild astringent applications were made two or three times, and the sulphide of calcium was given internally for about a week, when the pustule opened, its contents escaped, and it shrunk to about one third of its original size. In two or three weeks this had mostly disappeared, but the mucous membrane remained considerably swollen.

Two or three weeks later a similar growth appeared in nearly the same position, which ran the same course as the preceding, and left in-

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creased thickening of the mucous membrane, especially at the sides of the trachea.

This growth was soon followed by another, and it by a fourth, after which the thickening of the mucous membrane at the sides of the trachea, half an inch below the true cords, closely resembled the appearance of the ventricular bands when nearly approximated.

A chink was left between the two sides not more than three sixteenths of an inch in width by five eighths of an inch in length. Respiration was constantly greatly obstructed, and it became difficult for the patient to make the slightest exertion. Paroxysms of distressing suffocation, probably due to collection of the secretions, were of frequent occurrence, especially at night.

At this time another growth made its appearance near the anterior end of the welt on one side, and, as it slowly increased in size, steadily aggravated the difficulty in respiration so as to render the patient's condition dangerous. I was then compelled to do tracheotomy.

After the operation there were no unusual symptoms, and at the end of three weeks, the growth having disappeared, the chink was nearly as large as after the preceding growth. From what I learned of this gentleman's history, although there had been none of the common symptoms of specific disease for twenty years, I determined to give him iodide of potassium, which I administered in from ten- to twenty-grain doses for several weeks previous to the tracheotomy, but without good result.

About three weeks after the operation, at the suggestion of a friend who had treated the patient a few years previously for some obscure affection of the nervous system, I began the use of large doses of the iodide of potassium, starting with forty grains at a dose four times a day, and increasing the size of the dose each day ten grains until he took one hundred and twenty grains four times every day. This dose, which gave him four hundred and eighty grains daily, was continued about ten days, and then all medicine was suspended for a few days, when it was resumed in doses of forty grains, which were steadily increased as before.

Under this plan of treatment I saw the thickened tissues melt away, so that at the end of three weeks the caliber of the trachea was of full size. Subsequently the medicine was continued at intervals, being taken about half of the time for several months, in doses varying from thirty to sixty grains, three times a day. The patient, having left the city a few weeks after the operation, to be gone several months, used his own discretion in taking the medicine.

The canula was not removed from the trachea until after the patient's return to the city, six months after the operation. The opening closed so promptly that at the end of two days no air escaped from it.

In the first of these cases the large doses of iodide of potassium prolonged life many months. In the second case the iodide of sodium restored to usefulness a man who without it could have lived

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but a few weeks, and in the third case the iodide of potassium relieved the patient from the necessity of permanently wearing the trachea-tube, and perfectly restored his voice.

I have presented these cases merely as suggestive of what may occasionally be accomplished with enormous doses of a remedy which I believe should usually be administered in small doses. I am well aware that given indiscriminately it would be productive of most serious results, but used judiciously, in properly selected cases, it is an agent of inestimable value in some of the most dangerous affections we are called upon to treat.

Discussion.

Dr. De Blois: With regard to the treatment of laryngeal stenosis by the iodide of potassium, I have seen a case in consultation in which the patient was unable to take mercury. Large doses of iodide of potassium were given with marked improvement, as the swelling in the larynx almost entirely disappeared from the effect, it was believed, of the use of the drug.

Dr. Shurly inquired of Dr. Ingals whether in his first case the swelling was entirely of the mucous membrane, or whether the tracheal glands were involved.

Dr. Ingals replied that there was no reason to believe that the glands were involved.

Dr. Langmaid: I believe that laryngeal stenosis, in consequence of swelling, is very much more commonly the result of syphilis than is supposed. I agree with Dr. Mackenzie's view as to the proclivity of syphilis to show itself in the upper air-passages. It will be found that congenital syphilis in particular is the cause of many cases of death which have been attributed to croup, laryngeal diphtheria, etc., stenosis having taken place from subglottic swelling due to the syphilitic poison. Adults, as is well known, are not to be excepted. In the case of a woman suddenly attacked with urgent dyspnœa at night, I was called, and found subglottic swelling, corresponding to the condition described by Dr. Ingals. I suspected syphilis, and made immediate inunctions of mercury, and gave iodide of potassium internally, at the same time preparing for tracheotomy should it prove necessary. Recovery after the inunctions was rapid and complete. Some years ago I was requested to care for a patient of Dr. Knight's during his absence. I was sent for and found the patient suffering from urgent dyspnœa from subglottic swelling, and adopted the same treatment as in the other case. Relief was almost immediate. In looking back over my early dispensary experience, I can recall several cases of death in young children which I now believe might have been obviated by active specific treatment.

Dr. Delavan: A few years ago a woman came to me complaining of

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a slight degree of laryngeal dyspnœa which, although the laryngoscopic appearance resembled chorditis vocalis inferior hypertrophica, I believed to be due to syphilis. She stoutly denied specific disease, however, and disappeared from observation for about two months, when she returned, suffering so severely that tracheotomy seemed necessary. Examination showed that the trachea was almost completely occluded at a point immediately below the glottis. The patient finally admitted having acquired syphilis about ten years before. Before resorting to operative measures, large and frequently repeated doses of iodide of potassium were administered, with almost immediate relief to the dyspnœa, and within a wonderfully short time, with the entire disappearance of the subglottic stenosis.

Dr. Bosworth: The weight of evidence seems to be in favor of the use of large doses of iodide of potassium. My belief is, from experience in other than syphilitic cases, that iodide of potassium is a dangerous remedy in tracheal swellings or œdema. I have been accustomed to employ it, but with some hesitation, until in one case, in which it produced iodism, it resulted in such swelling of the mucous membrane of the air-passages as to render tracheotomy imperative. Since that time I have confined myself to the internal administration of mercury or to mercurial inunctions. The question arises, whether Dr. Langmaid's success was not due to the mercurial inunctions rather than to the iodide of potassium. I rely mainly upon mercury in the treatment of the late manifestations of syphilis.

Dr. Langmaid thought the improvement which took place in his cases was due to the mercurial inunctions rather than to the iodide of potassium.

Dr. Ingals, in closing the discussion: I am glad Dr. Bosworth has criticised the use of the iodide of potassium. In one of the cases mentioned in the paper I feared such a danger, and was induced to continue its use in large doses only by the assurance of the physician under whose care the patient had been, that large doses had been given before with impunity. It does not always require large doses of the iodide to produce a coryza. I know of patients in whom from five to ten grains will give rise to the symptom, while large doses produce no such effect. The custom of giving the drug uniformly in large doses is pernicious.

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Third Day, Morning Session.

Paper.

HERPES LARYNGIS.

By S. H. CHAPMAN, A. M., M. D.

HERPES LARYNGIS is a rare disease. During the past six years the writer has seen five cases, while of pharyngeal herpes his note-books give account of more than one hundred cases.

The proportion, then, is about one in twenty.

The disease is, probably, not so rare as it seems, since the difficulty of diagnosis is greatly increased by the rapid appearance and disappearance of the eruption.

No doubt many cases of so-called simple neuralgia are really cases of herpes, the eruption not being observed.

The cases will be first briefly described, and afterward conclusions be drawn from them, in so far as it seems possible from so small a number.

Case I.—A lady, twenty-two years of age, soprano in one of the largest churches in Connecticut, consulted the writer in June, 1878, because of harsh, discordant voice, and entire loss of singing-tones. During the spring preceding she had suffered from one attack of malarial fever, and continuously from the general symptoms of dumb-ague. A week before her visit, pain began to be felt in her throat of a lancinating character, notwithstanding which she sang the day following with good tones; but, by Tuesday following, the voice became husky and suddenly discordant. There had been no cough, and no perceptible expectoration. Her nervous system had been profoundly affected during these few days by pain, loss of sleep, agitation, and great anxiety. Her pulse and respiration were normal.

The physical examination showed a moderate congestion of the larynx and cords, and a deep, clean-cut, non-exuding ulcer near the middle of the left vocal cord, extending at least one third of the depth of the cord. Muscular action was perfect. In connection with this was also a pharyngeal herpes, and the same eruption upon the lips. The diagnosis was thus made easy, but the prognosis seemed to the writer doubtful.

The patient was ordered inhalation of tincture of benzoin with oil of eucalyptus, and the internal administration of quinine and arsenic, and was told that it was quite possible that the voice would remain permanently injured. In September she presented herself again, with the report that all pain had passed away after a few days from her first visit, and that, in two weeks' time, her voice had again become clear, but that

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she had not yet returned to her music. This the writer permitted her to do upon finding the larynx again in a normal condition.

CASE II.—A machinist, aged twenty-nine, living in a malarious district having suffered more or less severely for several years from malarial disease in different forms, was taken ill about ten days before his visit (April, 1879) with intense pain in the throat, cough, some pain in swallowing, and slight dyspnœa. These symptoms were rapid in development, and accompanied by the nervous agitation and anxiety so prominent in Case I.

Physical examination disclosed large, irregular ulcers, with clean-cut edges, in both ventricles; the surrounding tissue swollen, but the vocal cords normal and muscular action perfect.

There appeared to be no eruption elsewhere upon the mucous membrane. The ulcers were so intensely painful, even from the air passing over them, that the attempt was made to reduce this by the local application of glycerin, of glycerin and borax, and, finally, of a weak solution of silver nitrate.

Instead of diminishing, it seemed to increase the irritation, and the same treatment was adopted for this as in Case I.

Anodynes were also found necessary. The ulcers healed slowly, but the pain and distress disappeared within a week.

In September, 1879, the patient presented himself suffering from a second attack, during which the eruption occurred on the right side only.

CASE III.—A gentleman, an editor by profession, aged twenty-seven, had, in the spring of 1880, a severe attack of malarial fever, following some days of shooting on Long Island.

The fever left him debilitated and suffering from the ordinary symptoms of chronic mild malaria.

In June, the day following an after-dinner speech, he was seized suddenly with severe pain in his throat, "agonizing," he said, in character, with fever and rapid pulse, accompanied by a feeling as of some "impending calamity." On the day after the pain was first felt he had difficulty in swallowing solid food on account of the pain produced during its passage over the epiglottis. Food *seemed* to stick in his throat.

On this account he became, within a few days, quite weak, took to his bed, and had the appearance of great illness. There was with it a constant tickling and stinging which caused a dry, wearing cough. He began to speak in a whisper, because a loud tone seemed to increase the pain. There was no great emaciation, but sufficient to make one think at once of tubercular laryngitis.

Physical examination showed a severe pharyngeal herpes, and a large, ragged ulcer with perpendicular walls, extending over almost the entire posterior surface of the epiglottis to the left of the median line, and involving also a small section of the border of the epiglottis as well. The entire epiglottis seemed swollen and inflamed. Touching the ulcer with

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a silver probe produced exquisite pain and a severe attack of spasmodic coughing.

Upon questioning him, it was discovered that one of the peculiar affections following the malarial attack had been herpetic eruption, developed rather generally, but especially about the face and back.

The constitutional treatment by quinine, arsenic, and strychnine was adopted at once, and the local treatment consisted of inhalations of benzoin, oil of eucalyptus, and oil of hops. The pain from swallowing was so intense that the endeavor was made to coat the ulcer with benzoin in saturated tincture. This was quite successful, but it was necessary to renew it several times daily. The eruption was very slow in disappearing.

In three weeks the original ulcer healed, but there appeared at this time a second upon the opposite side of the median line, smaller in extent than the first; and since the border of the epiglottis was not implicated, the swallowing of food caused no pain. The entire duration of the disease was between six and seven weeks.

At that time he was ordered to the sea-shore, and fully recovered his health during the autumn.

His throat has been examined since then, the last time two months ago, and been found to be in perfect condition.

Cases IV, V, and VI are very similar to Case III, one of the patients a woman aged thirty-nine, and the others men of about forty years of age, living in good circumstances, but in specially malarious regions. The affection in all was situated on the posterior surface of the epiglottis. In all three, relapses occurred; and in one, Case VI, relapses have occurred so often that it is doubtful whether a permanent cure can be effected, except by change of climate.

In all three the nervous symptoms were very prominent. At first flesh was lost rapidly, and recovery came slowly.

In one, Case V, the writer expected the eruption before it appeared; on account of the preliminary symptoms, a careful examination of the larynx was made for several days, and was rewarded by the observation of the growth through all its stages, from a small red point to a vesicle, and finally to an open ulcer.

The following conclusions may be drawn from these cases, although it must be distinctly understood that any conclusions from so few cases must always be subject to modification:

1. There exists such a disease of the larynx as herpes.
2. Its character is that of a neurosis.
3. It is closely allied to herpes of the pharynx and other mucous membranes.
4. It differs from other forms only on account of the peculiar microscopic anatomy of the larynx.

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5. It is peculiarly a disease of malarious districts, and one of the eccentric developments of malaria.

6. It simulates tubercular inflammation of the epiglottis. The differential diagnosis, however, is easy. It is based upon the extreme rapidity of development, the absence of fever, the history of malarial affections, the previous or simultaneous development of herpetic eruption elsewhere, and the rapid disappearance of the disease.

7. Its seat is usually the posterior surface of the epiglottis.

8. The nervous system is always profoundly affected.

Paper.

CASES OF BUCCAL TUBERCULOSIS.

By THOMAS AMORY DE BLOIS, M. D.

CASES of tuberculosis involving the buccal cavity are certainly sufficiently rare in this country to merit mention whenever they are met with, either where it first shows itself in the mouth, or when, after manifesting its presence in other parts of the body, it finally extends itself into that region.

I do not think that we have any good reason to doubt that there is always a deposit of tubercle in the lungs before we find it either in the pharynx or in the larynx, although we may not have the physical signs in the chest to indicate its presence.

Why, then, should there be any distinction made between cases which appear primarily and those which appear secondarily in the buccal cavity?

I have the privilege of reporting to-day two cases of this rare affection, similar only in the fact that they both proved speedily fatal, which fact, indeed, is common to all the cases of this affection heretofore published. In the one, the buccal lesion was soon seen; in the other, it was the last extension of the disease.

Case I.—J. O'C., a native of Prince Edward's Island, aged thirty years, always of delicate constitution, and inheriting from both parents a tendency to pulmonary disease. A few months prior to his arrival in Boston he exhibited signs which to his friends appeared to be sufficiently serious to warrant medical examination. To use the patient's own words, evidences of consumption were found. He did not want for good or well-directed efforts at treatment. Two months before I saw him he first noticed a difficulty in eating. The back part of his mouth appeared to him stiff and sore; the soft palate felt too thick, and this soreness, red-

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ness, and stiffness, according to his own story, gradually extended farther and farther to the front, until he came to Boston, when he very speedily found his way to the Boston Dispensary, February 8, 1883.

At the time I saw him he exhibited the following condition: The tonsils, velum, hard palate, and base of the tongue were one continuous mass of ulceration, showing that gnawed and worm-eaten appearance so often seen on the ary-epiglottic folds in cases of laryngeal tuberculosis. The edge of the velum and the uvula were dentated from this process, and farther toward the front of the mouth the mucous membrane was studded with gray nodules of tubercle which had not yet broken down. Some distance in front of the junction of the hard and soft palates there was a perforation through the bones into the posterior nares, where, with the probe, a large extent of denuded and necrosed bone could be felt on the bony septum and turbinated bones, showing that region to be fully involved in the general destructive process.

An imperfect view of the larynx was obtained with the greatest difficulty, owing to the extreme degree of pain that touching the soft palate caused, but the larynx appeared to be free from ulceration, and, as the voice was unimpaired, except the muffling due to the thickened palate, it would seem that it had escaped the invasion of the disease. The patient said, also, that he felt no pain about the thyroid cartilage during deglutition, but that the pain at the isthmus of the fauces was more than he could bear, and he preferred not to eat at all. Certainly his appearance would have indicated that he had pretty well carried out that rule, as there was a degree of cachexia seldom seen. There was no specific history whatever, and several dermatologists carefully examined the patient with a view to discover if there was any unacknowledged taint.

Everything possible in the way of sustaining treatment was carried out, and careful cleansing and the daily use of iodoform as local treatment for the mouth; but the patient rapidly grew weaker, owing in part, certainly, to his inability to swallow solid food of any kind. A great deal of attention was paid to the treatment of the necrosed bones in the posterior nares, and what was possible was removed through the opening already mentioned, but the parts were in such a condition that nothing could be done through the naso-pharyngeal space.

This man remained as an out-patient for some weeks, deglutition becoming gradually more painful, until finally it was with the greatest difficulty that even fluids were swallowed, for even their impact against the soft palate caused the most exquisite pain. He was then sent to the Carney Hospital, from the records of which I find that:

"J. O'C., aged thirty, born in Prince Edward's Island, single, by occupation a clerk, was received under the head 'Phthisis,' March 3, 1883. He began to cough November 1st. On admission, muco-purulent expectoration, night-sweats; voice lost nine weeks ago, obliging him to close the nose to swallow. Ordered milk enema, potass. chlorate gargle. March 4th, iodoform blown into roof of mouth. March 8th, died."

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An autopsy was permitted by the relatives, but, unfortunately, by some blunder at the hospital, it was not made, and this most valuable specimen was lost.

By the hospital records it would appear that no examination was made of either lungs or throat, and the voice was never lost, as stated in the record, for I saw him at the hospital the day before he died, and he spoke quite distinctly, although his voice was muffled, evidently from the perforation of the palate, but it was not at all the aphonia of laryngeal tuberculosis.

Case II.—Miss E. D. This was more properly a case of laryngeal tuberculosis, for the first evidence of disease was derived from the throat symptoms; but, by its extension into the buccal cavity, it merits a place in this paper.

The patient, a young lady, one of the assistants at the Boston Public Library, had always enjoyed excellent health. She first noticed a hoarseness, which not disappearing under the efforts of her family physician, she saw Dr. F. I. Knight, of Boston, by whom she was examined, and who has kindly given me these few notes from his case-book:

"E. D., aged twenty-four, was examined November 4, 1882. Father died of 'lung fever,' mother died parturient, brother died, according to patient's own words, from 'consumption of the blood.' She stated that she never had had any trouble with the lungs. Had been hoarse for two months, with slight cough for eight months. Gaining flesh on cod-liver oil. Had had hæmoptysis, losing about a tablespoonful of blood. Said she felt generally well. Examination showed a superficial ulceration of both ventricular bands. Abundant moist râles in right front of chest."

After this examination she went back to the care of her former attendant. In December she came to the office of Dr. S. W. Langmaid for treatment. She was now very hoarse, and, after treatment by lime for some time, in February, 1883, by his advice, she went to Florida. Here she passed the spring months, and, although somewhat benefited by the climate, she was entirely without any intelligent local treatment. Her physician there made several unsuccessful attempts to apply nitrate-of-silver solution to her throat, causing her thereby much pain. She returned from Florida in May, and went as an out-patient to the City Hospital, where she came under my care about June 1, 1883, and from there came to my office every day. An examination of the chest was always declined, so that I am unable to state what were the physical signs at that time.

There was marked aphonia, the patient barely being able to whisper; and it was with the greatest difficulty that what she said could be distinguished at all. The pharynx at this time appeared to be normal, but the larynx in all parts seemed to be deeply ulcerated, the ary-epiglottic folds were greatly swollen and œdematous, deglutition was performed with the greatest difficulty and was almost always accompanied by vio-
' attacks of coughing, and, generally, liquid and semi-solid food had to

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be used. Carefully applied sprays for cleansing and local treatment were used; also occasional insufflations of morphine, and always of iodoform; also nitrate of silver and local scarification, when it appeared to be indicated. During the months of June and July there was great improvement; the voice somewhat improved, and the deglutition was much easier. Solid food could be swallowed with comfort, and there was a gain of several pounds in her weight. But during the month of August the patient again commenced to fail rapidly, and the difficulty in swallowing returned. About this time there appeared on the tonsils, particularly the right, a small, grayish spot, which closely resembled tubercle in its gross appearance. Implanting itself first on the edge of a lacuna, it seemed to progress both inward and outward, spreading into the interior and on the buccal aspect of the tonsil. The pain in swallowing seemed to be somewhat increased, but not so much as might have been expected.

All through the month of September the patient lost ground and the ulceration increased. There was considerable dyspnœa, and it became evident that she could last but a few weeks longer. She was, therefore, sent to the Boston City Hospital, from the records of which the following notes are taken:

October 5th.—E. D., aged twenty-five, single. Family history fair; catamenia regular, last two months ago. Trouble began a year ago; gave up work five weeks ago; not sick abed; trouble began with cough, especially at night; dry, or with slight yellowish expectoration later, and at present thick, white and frothy; slight hæmoptysis at first; none since. Frequent chilly sensations; hoarseness for the last nine months, and loss of voice; no night-sweats; some shortness of breath; no pain in the chest; occasional palpitation of the heart; appetite good; difficulty in swallowing for the last six months, etc. Temperature 100·6°, pulse 132. Tongue slightly pale and moist. Respiration 36. Has lost forty pounds in nine months. Is weak and trembling; former weight one hundred and thirty-five pounds. *Lungs:* Dullness over both fronts, most marked on right. Under right clavicle, cracked-pot resonance. Broncho-vesicular respiration over whole right front and upper part of left. Under right clavicle, cavernous respiration. Moist râles over both fronts, most numerous on right, and bubbling râles under right clavicle. Increased whisper in both chests, but most marked on right.

Upper halves of back give corresponding signs to fronts. Urine normal, acid 1·020, trace of albumin. Sediment squamous epithelium.

Sherry, brandy, opium, carbonate of ammonium, etc.

22d.—Four days ago diarrhœa began and persisted until yesterday noon; dejections numerous, fifteen or more in twenty-four hours; watery diarrhœa weakens patient greatly. Began to fail rapidly last night, and died at 12.45 P. M. to-day.

An autopsy was allowed, and was made by Dr. W. W. Gannett, Pathologist to the City Hospital.

E. D.—Diagnosis: tubercular tonsillitis; extensive tubercular ulcera-

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tion of the larynx; tubercular ulceration of the mucous membranes of the bronchi and trachea; tubercular peribronchitis; bronchiectasis, and one cavity from ulceration; miliary tuberculosis of the spleen, kidney, and liver; tubercular ulcerations of the intestines.

Under the microscope, sections from the larynx showed evidence of tubercle, and many of these nodules are easily seen on the specimen.

The following note I received from Dr. Gannett:

"110 Boylston Street, *April 27, 1884.*

"Dear Doctor: I have examined various portions of the tonsil in your case, but fail to find any evidence of tuberculosis.

"Numerous sections made so as to include parts of the wall of the cavity in the tonsil give a like negative result.

"In the tissues about the arytenoid cartilages and vocal cords, on the contrary, there are numerous tubercles.

"A diagnosis of tuberculosis or tubercular ulceration of the tonsil is, therefore, not warranted.

"Sincerely,

"W. W. Gannett.

"To Dr. T. A. De Blois."

As regards the cases of this affection on record, I regret that the "Index-Catalogue of the Library of the Surgeon-General's Office" is not sufficiently advanced to furnish me references on this subject. However, by carefully searching the "Index Medicus" from the beginning, I find cases reported in 1878 by Bordenave, Routier, Gaucher, von Ziemssen, and Laboulbène; in 1880 by Caselli and Barth; in 1881 by Zawerthal, Chassagnette, and Lennox Browne; in 1882 by E. W. Cushing and Bosworth; and in 1883 by Gougenheim, Lennox Browne, Schnitzler, and Cadier, besides the case which our friend Dr. Bosworth so kindly showed us at last year's congress. Most of these authorities cite other cases seen by other observers, so that there does not appear to be any great dearth of literature on this subject, at least in Europe.

Although Isambert says that there is little difficulty in the differentiation from syphilis, yet almost all the other authorities are very profuse in their rules for this differentiation. Routier states that one of his cases was for some time treated as syphilis, and then mistaken for epithelioma, cancer of the tongue, gummatous tumor, etc., but that the lesion healed under local applications of the tincture of iodine and the internal use of iodide of potassium, although it subsequently relapsed.

The ordinary treatment for syphilis is generally considered to do more harm than good in tuberculosis of the mouth.

The prognosis is, by all authorities, believed to be of the worst.

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Many cases where the local lesion has been temporarily healed are reported, but it has always relapsed when the patient has not died from exhaustion and the effects of the disease on the general health.

As Isambert states, it is at most a matter of some months.

As regards the destruction of tissue from perforation, some of the reported cases have been examples of this, and others have seemed to stop short. Cadier reports one case of perforation of the velum with loss of the uvula.

I have had an example of this complication in a case believed to have been buccal tuberculosis, but, as I was not positive that there was not also syphilis, I have refrained from reporting it.

The record of treatment is but a reiteration of many disappointments. Lennox Browne speaks of the successful local healing of tubercular ulcerations with the galvanic cautery. Routier indorses the use of iodine and nitrate of silver. Isambert speaks of the sad consequences of their use, as it only hastens the fall of the epidermis and the uncovering of the granulations. He, like his echo, Cadier, recommends glycerin and morphine.

I have found nothing so useful and soothing as iodoform, and, although the buccal ulcerations in my cases never healed, yet their pain was always diminished, and swallowing was in one case rendered possible by its use.

I can not regard tubercular ulceration of the buccal cavity as anything else than an anomaly in the deposit of tubercle, in a case of general tuberculosis. It may precede and it may follow the discovery of the physical signs in the chest, but, so far as I have been able to find, there has never been a case in which the patient has not, sooner or later, succumbed to the ravages of tuberculosis.

Discussion.

Dr. Langmaid said, in adding a word to the history: When I first saw the girl she was so plump and finely developed that no one would have supposed she had disease of the lungs. Still, upon looking into the mouth, it was evident that there must be disease of the pulmonary organs. On examination, signs of limited phthisis were found under the right clavicle. With the patient's excellent nutritive condition, the case was one which would lead the physician to hope, with proper care, for a number of years of comparative comfort. But the laryngeal complication was against such hopes. When she came to me, dysphagia was severe, but the result of local treatment was very marked, and when she went to Florida she ate with comfort. It was hoped this relief might continue, but she had not been in Florida more than three weeks when the

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throat again became sore. There she could not receive proper local treatment. This is a point which has interested me in this and in other cases, namely, that laryngeal phthisis changes the prognosis regarding the general disease so much that it also necessitates a different course of treatment. I hesitate to send patients suffering from laryngeal phthisis away from home, preferring to keep them even in an injurious climate where they can receive proper local treatment to sending them away to a climate which will be better for the pulmonary condition, but where no throat supervision can be exercised. About this time a patient came to me from New Mexico, and, on examination, I found him to be suffering from an ulceration within the larynx. He had returned from Mexico because of the increasing severity of laryngeal dysphagia. I found what I believe was a tubercular ulceration in the naso-pharyngeal space, presenting very much the appearance seen in Dr. Bosworth's case shown to the society a year ago. The ulcer, however, proved not to be tubercular, and healed under treatment. But the laryngeal difficulty went on, and the man died of phthisis.

The President thought the paper presented by Dr. De Blois an exceedingly important one. So far as I know, he said, this is the first case in which a post-mortem examination has been made. I do not see why the tubercular process may not be one and the same thing whether it occurs in the larynx, tongue, or pharynx, or elsewhere. Certainly the gross appearances are to my sight identical, and heretofore I have had no doubt whatever that, at least in the last stages of phthisis, there was a tubercular deposit in the special parts mentioned. Many of those present saw the girl presented last year, nineteen years of age, healthy-looking, with extensive ulceration of the soft palate, pharynx, and larynx. To look at her, no one would have supposed that she was in bad health. Still, she died within six months from exhaustion. Pain referable to the tubercular ulcer was kept entirely under control by iodoform and morphine. Furthermore, no lung complication could be detected by physical examination. It seems to me that too much importance has been attached to the impossibility of tubercular deposit occurring primarily in the upper air-passages. We may find tubercle in any other part of the body as a primary deposit, but, with reference to the tongue and larynx, some are inclined to doubt its existence. For my part, I can see no reason why the larynx may not be the primary seat of tubercle. A singular fact regarding tubercle of the upper air-passages is that the closer it occurs to the mouth or the outer world the more serious is the prognosis. Pulmonary tuberculosis may be recovered from; laryngeal tuberculosis, very rarely; while buccal tuberculosis, so far as observation goes, is never recovered from, and the symptoms are very difficult to allay.

Dr. De Blois, in closing the discussion, said: Perhaps I have not brought out the fact that, at the autopsy, tubercular ulceration was found in the intestines, the kidneys, and the liver, and that there was tubercular ulceration extending well down the trachea.

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Paper.

HAY FEVER AND ITS SUCCESSFUL TREATMENT.

By CHARLES E. SAJOUS, M. D.

AT a meeting of the Philadelphia Laryngological Society, held on the 23d of last November, I read a paper entitled "Notes on Hay Fever," which was published on the 22d of the following month, and reported a series of cases in which the accesses were prevented by what might be termed organic alteration of the surface of the nasal mucous membrane.

In the contribution herewith presented I am obliged to quote largely from that paper. I must state, however, that a number of cases have been added to the list, and that close observation has furnished me valuable information which has led me to doubt some conclusions arrived at at the time, while strengthening others.

In the spring of 1881, while investigating, at the Jefferson College Hospital, the merits of glacial acetic acid in the treatment of intra-nasal hypertrophies, I came across two patients who stated, in the course of their general history, that they were subject to hay fever. Both had middle turbinate hypertrophies, complicated in one case with a posterior growth, causing complete stenosis of the left naris. Glacial acetic acid was used to destroy the anterior growths, while the posterior was extirpated with Jarvis's snare. Bearing the hay-fever history in mind, I applied the acid over a much greater surface than was necessary for the destruction of the hypertrophies, hoping by this means to diminish the sensitiveness of the mucous membrane, primarily affected in the course of the hay fever, and if not prevent, at least diminish, the intensity of the accesses. When the time came for the hay fever to manifest itself I watched the cases closely. The symptoms did not recur.

In studying the *modus operandi* of the treatment in bringing about such a result, we must adopt the generally accepted theory that hay fever is due to an idiosyncrasy on the part of certain individuals to become affected by certain emanations. The experiments of Blackley show that the pollen of the majority of plants is the agent that produces the impression on a system sensitive to its action, and that, this pollen being disseminated throughout the atmosphere at certain fixed seasons, the symptoms present themselves only at fixed seasons.

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shows clearly that pressure can not be adduced as a cause. As to interference with nasal respiration in the course of an access through partial or complete stenosis induced by the engorgement of the nasal corpora cavernosa, I can not see clearly how it can be considered as a cause, since the engorgement is secondary to the cause of the exacerbation.

I am of the opinion that a permanent hyperæsthesia of the nasal mucous membrane exists in persons in whom an idiosyncrasy to become affected by the pollen of flowers or certain irritating substances is present, and that, as was the case with the two patients treated three years ago, the destructive agent employed had induced an organic transformation on the surface of that membrane which destroyed what morbid irritability attended the nervous filaments distributed over it. In other words, they had so altered those parts primarily affected in the course of an attack that they were no longer sensitive to the foreign elements acting as an exciting cause.

As an illustrative case, I will cite that of a young lady whose accesses had appeared regularly for several years. The applications not only prevented the symptoms, but made her nasal membrane absolutely invulnerable to the effects of pollen and other irritants. As a test, she exposed herself as much as possible to the emanations of the plants which she knew to be the most liable to occasion a manifestation of her idiosyncrasy, and went even so far as to place bouquets in her bedroom, and to approach a field of clover, her most dangerous enemy.

Had the idiosyncrasy itself yielded to the treatment, or had it ceased to exist in the patient? Neither can be the case, for one of the symptoms, palpebral pruritus, occurred, showing that the idiosyncrasy still existed in the patient, but that the organic alteration in the nasal membrane had annulled its liability to infection, thus preventing all symptoms secondary to its abnormal irritability, but not that manifested in the palpebral conjunctiva, which was irritable *per se*, and had not, of course, been cauterized.

The applications were made principally over the surfaces of the lower and middle turbinated bones and the portion of the septum corresponding with those surfaces.

The mucous membrane covering these parts is supplied by the inferior nasal branches of the large palatine nerve, which is derived from the spheno-palatine ganglion. They enter the nasal cavity through foramina in the palate bone. Now, the spheno-palatine ganglion possesses, besides its motor and sensory roots, a sympa-

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thetic root which is derived from the carotid plexus through the Vidian, and forms the connecting link between the nasal membrane and the sympathetic system, establishing an intimate and direct inter-communication between that membrane and the sympathetic system, through the largest of the cranial ganglia.

Organic alteration of the area over which its branches are distributed, preventing a manifestation of the idiosyncrasy, and the near proximity of this ganglion, explain, it seems to me, that it is through it that the impression which gives rise to what remote symptoms the patient may be liable to is transmitted to the general system. Thus we can trace a direct connection with the lungs, in relation with the frequently present symptom, reflex asthma; the superior cervical ganglion, from which the branch forming the carotid plexus is derived, is connected with the inferior ganglion of the trunk of the pneumogastric, which involves the whole of the fibers of that nerve, with the exception of one, while in the thorax the posterior pulmonary plexus is not only formed by branches of the sympathetic, but also by some from the pneumogastric, and the two thus combined follow the ramifications of the air-tubes. Here their course is dotted with small ganglia, and their filaments become lost in the minute unstriped muscles of the bronchial tubes which were shown by Salter to cause, when thrown into a state of activity, the mechanical contraction which gives rise to the asthma.

In passing, let me state that this author says that "asthma consists of a perverted sensibility of the nervous system in its transmitting on to the muscle as a stimulus to contraction that of which it should take no cognizance. . . . The vice consists not in the production of any special irritant, but in the irritability of the part irritated."

To asthma as a symptom of hay fever this theory can be well adapted. The affection first manifesting itself in the nasal mucous membrane, this, then, is the seat of that morbid irritability; from it is transmitted through the nervous system that which causes spastic contraction of the fiber-cells of the organic muscles in the bronchial tubes.

I alluded to the influence exerted by intra-nasal malformations, either congenital or due to hypertrophic changes, on the intensity of the manifestation. A number of cases have been reported in which the accesses were avoided by the removal of hypertrophies. I am inclined to believe that the destruction of these hypertrophies was but of secondary importance in the effect produced, and that the

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organic changes occasioned by the cautery in the mucous membrane altered its hyperæsthesia. I am far, however, from considering malformations as innocuous in the history of the affection. I am so penetrated with the idea of their importance that I invariably resort to surgical procedure if they induce pressure or prevent the thorough application of the galvano-cautery. We are all familiar with the reflex asthma of some cases of nasal polypi, caused, in my opinion, by pressure on the branches of the spheno-palatine ganglion, and transmitted to the lungs as described a moment ago. Bearing their occurrence in mind, we certainly can accept the fact that asthma can be caused by the pressure of an engorged hypertrophied mucous membrane in the course of the violent inflammation engendered by the irritant to which the patient is sensitive. The asthma may even be kept up long after the other symptoms have ceased, hypertrophic changes in the membrane and the bones having been sufficiently developed to induce constant pressure, as in the following case:

Dr. H., a prominent Catholic clergyman of Philadelphia, had had regular annual attacks of hay fever for about twenty years. His last had been unusually severe, and was followed by asthma, which, instead of disappearing as formerly, remained, manifesting itself especially after he had been in the recumbent position for some time. Examination revealed almost complete stenosis of the left naris, due to pressure of the septum. The latter, however, was not deviated sufficiently to account for the narrowness of the chamber, but was found, by means of the septometer, to be over a quarter of an inch thick at the point of closest contact. What hypertrophied tissue could be reached was cauterized without, however, inducing much change. I then concluded to diminish the abnormal thickness of the septum, which was done by passing the bur of the surgical engine under the mucous membrane and holding it in contact with the vomer until about half of its thickness had been removed. A free passage for the air was established and the contact relieved. The asthma disappeared.

In another case a prominence in the middle of the septum was reduced by the file, this also being passed under the mucous membrane.

If there is a deviation of the septum, and this interferes with the proper application of the cautery, I as much as possible correct the deformity. Hypertrophies are destroyed with the snare or cautery, according to their location.

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In my early cases I used glacial acetic acid, but I had to abandon its use because, in order to obtain satisfactory results, it had to be applied repeatedly over an extensive surface, giving rise to much pain. The galvanic cautery serves me better, requiring but few applications, and being painless if properly used. I apply the cautery-knife with its flat side on the surface of the membrane, repeating that procedure in as many sittings until the whole surface extending over (and as much as possible under) the middle and inferior turbinated bones is well singed.

It would seem that such a radical alteration of the nasal membrane would occasion either a loss of, or at least impair, the sense of smell. This is not the case if the applications are properly made. The "olfactory membrane," which in man is yellow, covers the upper part of the septum, the superior turbinated bone, and the upper part of the middle turbinated; it is consequently but slightly involved in the treatment. On the contrary, olfaction is often improved by it, the reduction of the tumefaction facilitating the passage of air, and consequently that of the odoriferous particles. I have never had the least bad result, the treatment being successful and permanent in every case when thoroughly applied.

As a *résumé*, I would submit the following:

That hay fever is an idiosyncrasy existing in certain individuals, to become influenced by certain emanations or irritating substances.

That the idiosyncrasy is accompanied by a chronic hyperæsthesia of that part of the nasal mucous membrane covering the inferior and middle turbinated bones, the middle meatus, the floor of the nose, and that part of the septum below the limit of the olfactory membrane.

That organic alteration of those parts annuls that hyperæsthesia, preventing at the same time what symptoms the patient may be liable to in the course of an access.

That any destructive agent will induce that organic alteration, but that the galvanic cautery is by far the best, being painless, effective, and devoid of all danger when used in practiced hands.

That, in order to obtain a satisfactory result, a sufficient number of applications must be made, covering the entire extent of the over-sensitive surface, without which the result will be doubtful.

Now, gentlemen, permit me to state, in conclusion, that prior to last Saturday, and *after this paper had been written*, I knew nothing of Dr. J. O. Roe's theory of hay fever, his method of treatment, and his results. The contribution I have just had the honor

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of presenting to you embodies precisely those views, and the results shown indicate evidently that the theory is the true one. Since I can not come in first, I am happy to come in a good second, for I feel that I have done something to strengthen in your minds the assertions set forth in Dr. Roe's excellent papers on the subject. Nothing can be stronger than unbiased, independent research and subsequent arrival at identical results. We were separated by hundreds of miles, unaware of each other's labors, and still the same point was attained, which gives us good reason to think that another affliction of humanity can be mastered. I feel happy at this coincidence, not only because I have given strength to Dr. Roe's views, but also because I feel very much stronger in mine; but I wish to call your attention to the fact that his first success was attained in 1879, while mine was only two years later. To Dr. Roe, then, belongs the honor of having first brought before the profession means for the radical cure of one of the most intractable diseases with which it has had to contend, and to the American Laryngological Association the merit of having been the *stimulus* that brought forth a paper which will only be what the first stone is to a monument.

Discussion.

Dr. Shurly said: I have seen three cases, one of which was of the neuralgic form, and the other two true hay fever. In operating I had not followed exactly the practice laid down in Dr. Sajous's paper. Instead of singeing over the entire surface, I have simply cut just through the membrane, not very deeply, and finished up one side at a sitting. Previous to operating I have been in the habit of ascertaining with a little probe the limits of the hyperæsthesia. In one case I found it confined to the middle turbinated bone, and operated upon that alone. The last case operated upon I have not heard from since the operation. In another case the cure has remained perfect for eighteen months, up to the present time. The patient had suffered for years, and in other respects was healthy; there was no hereditary history of the disease.

Dr. Roe said: I am glad to find that the author's experience so fully coincides with my own. With regard to the permanent effect of the operation, in only one or two cases have I found any return of the trouble whatever. One patient was operated upon in 1879, with no return of the affection. One patient who underwent treatment about two years ago had a slight irritation in one nostril the following summer, but it was found to be due to lack of thoroughness of treatment, and I believe that where there is any return of the difficulty it will be found to be due to the fact that the entire sensitive area has not been treated. A means of determining whether or not treatment has been effectual is

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the use of the probe, touching the surface with it, if any sensitive point remains, the patient will manifest it at once when touched. I have many times brought on marked attacks at once by touching the sensitive spots. In one case the attacks were brought on by touching the superior portion of the nasal septum on one side. The patient did not continue treatment until I felt satisfied that he was cured, and during the summer he had another attack. In the autumn and winter it was found that a sensitive point yet remained untouched.

With regard to the way in which asthma is brought about, I do not quite agree with the author that there is spasm of the bronchial tubes. I think it due to congestion of the mucous membrane. Irritation of the nerve produces engorgement of the pulmonary vessels, and asthma is thus produced. This theory is verified by the clinical features of the case. After an attack of asthma there is always a good deal of expectoration, and, as soon as the expectoration becomes free and the tubes are clear, the asthma subsides. If there was simple spasm of the bronchial tubes, we should not expect this free exudation.

As to the different exciting causes, some are due to engorgement and hypertrophy of the nasal membrane. In such cases we have to destroy the hypertrophic tissue, and if there are any exostoses of the turbinated bones, or of the septum, it is important to remove them in order that no occlusion may take place by swelling of the mucous membrane. It does not follow, however, that all persons with nasal stenosis have hay asthma. It would seem that there must be, back of this exciting cause, an idiosyncrasy affecting the terminal fibers of the nerve in the nose. It is sufficient simply to remove the irritability, and destroy the deeper plexus of vessels, so that no engorgement can take place, and, when we are sure that we have removed all irritability, we can also be sure that we have cured our patient. If any irritable area remains, we may be sure that our work has been incomplete.

Dr. Mackenzie said: Reference has been made in the discussion to the well-known but imperfectly understood personal susceptibility or "idiosyncrasy," a term which has been used to cover our ignorance concerning the pathology of the disease. I propose to substitute for the meaningless term idiosyncrasy that of abnormal excitability of the vasomotor nerve-centers. While it is undoubtedly true that certain conditions of the nasal passages are necessary to the production of a paroxysm, I think it equally certain that in a number of cases such conditions are brought about by abnormal functional activity of the nerve-centers, and that, in our zeal as specialists, the importance of the latter as an ætiological factor should not be lost sight of. I think, therefore, the theory of organic change in the terminal fibers, as advanced by Dr. Roe, and that of nasal obstruction, as advocated by Dr. Allen, inadequate to account for the phenomena of the disease in question. The essential, distinguishing feature of so-called "hay fever" resides in an exalted condition of erethism of the nasal erectile tissue, and especially that portion occu-

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pying the posterior end of the inferior turbinated bone and the septum immediately opposite—an area which I believe to be especially concerned in the production of the nasal reflexes. This area corresponds, as I have shown, and as had been subsequently pointed out by M. Longet, to the distribution of the two spheno-palatine nerves, as distinguished from the nasal branch of the ophthalmic, which latter supplies the anterior portions of the nasal fossæ. The former nerves are derived through the ganglion, and probably, therefore, contain the vaso-motor filaments that govern the erection of the turbinated tissue. *Hence the discovery of the sensitive area in the posterior part of the nasal fossa becomes the key to the mechanism of the paroxysm, and brings us nearer the solution of its pathology.*

This exaggerated irritability of the cavernous tissue may be directly due to the constant presence of congestion or other pathological conditions of that structure, the result of direct (or reflex) stimulation from *ab extra* influences, *plus* an over-sensitive state of the nerve-centers begotten of their constant excitation by the irritation in the nose; or it may be brought about, in the first instance, by an exalted state of the central nervous system, leading eventually to disordered functional activity of the vaso-motor centers; or, finally, an over-sensitive condition of the latter may be conditioned by other pathological states of the system as a whole, or as the result of reflected irritation from its individual parts. As an example of the latter, I may refer to a case where the paroxysms were probably occasioned by disease of the ovaries. There is, practically, an infinity of causes, external and internal, which may precipitate the nasal orgasm, such as various forms of matter in the atmosphere (odoriferous particles of certain plants, germs, fruits, forms of animal life, etc.), or the same result may be brought about by causes commonly productive of erection of the nasal tissue, such as varying meteorological conditions, etc. I have provoked the paroxysm by irritation of the sensitive area with the probe. Whatever be the original cause of such special tendency to erection and evolution of reflex phenomena, the essential part of the mechanism of the paroxysm is the congestion and consequent orgasm of the nasal erectile area. In accordance with these views, the treatment should consist in the careful search for, and appropriate treatment of, any source of central or reflected irritation, the exclusion of local irritants, and the topical treatment of existing nasal disease. The latter will generally consist in *the destruction of that portion of the erectile area supplied by the spheno-palatine nerves.* By this latter procedure the essential part of the mechanism by which the paroxysms are produced is abolished, and the machinery which puts them in action stops.

I agree with Dr. Roe that the best method for destroying cavernous tissue consists in the skillful use of the galvanic cautery.

Dr. Beverley Robinson said: I have had but comparatively little experience in the treatment of hay asthma, but I would ask the experience of those present in the use of carbolic acid. Last summer a lady

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came to me who said she had suffered from hay asthma for some years, and was then in the beginning of an attack. Happening to have some pure carbolic acid at hand, I covered a probe with it and passed it through the nose on both sides of the septum. Within a day or two she returned and said she had been greatly relieved. I made three or four more applications, and she has remained practically cured. Since that time I have had occasion several times to apply carbolic acid in the treatment of nasal catarrh, with excellent effects.

Dr. Roe said: I can not agree with Dr. Mackenzie regarding the pollen theory. I believe that hay fever is due to pollen. If it were not, why should the attack occur usually at a certain period of the year, the patient perhaps being able to tell the day and hour when it will come on, corresponding to the season when certain grasses and plants throw off their pollen. Many patients can tell the particular weed which affects them (commonly the ragweed), and by avoiding this can avoid the attack. I am therefore convinced that the pollen theory is correct.

Dr. Johnston said: In my own case I never suffer from catarrhal troubles except in August, and usually on the 28th of that month I expect an attack of hay fever. I am less likely to suffer if I avoid the fields, the railroad cars, and dusty places. Last summer I went to Washington and had a severe attack; but on reaching the mountains, three hundred feet above the sea, the attack at once disappeared; when I returned to Washington, the attack was renewed. I obtained relief by inhaling morphine, chloroform, or eucalyptus.

Dr. Mackenzie, having understood Dr. Roe to say that all cases were due to the pollen, said that, while it was undoubtedly true that most attacks came on during certain months of the year, and many patients could predict with absolute certainty the day and even the hour of the attack, this was not universally the case by any means. There were patients who had hay fever in the winter, the attacks being just as severe as in the summer, and apparently due to a change in meteorological conditions. There were, in fact, innumerable different things which would precipitate an attack. He knew a patient who could bring on a paroxysm by stepping on the cold floor after rising from bed in the winter.

Dr. Roe remarked that persons might be exposed to pollen even during the winter.

The President said: I have seen at the dispensary a great many cases of this affection, which I think might better be called vaso-motor rhinitis, and in every case I believe three elements exist to bring about an attack —namely, a nervous or neurotic element, which has already been shown so conclusively to exist; a structural change in the nasal cavities; and a sensitiveness to the influence of some extraneous agent, as ragweed, etc. Now, remove any one of these three elements, and we prevent the attacks. This may be done by different means. For instance, I have a patient who went systematically to work to overcome the diathesis by hygienic means, and he completely cured his case by thus removing the neurotic tenden

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cies. If a patient is sensitive only to the ragweed pollen, by avoiding that he will avoid the paroxysms. If the other element, the peculiar condition of the nasal membrane, is removed, this also will prevent the occurrence of the attacks.

Dr. SAJOUS, in closing the discussion, said: In speaking of the nasal condition, I did not mean to overlook the reflex center. It amounts to the same thing. The nose is the most exposed surface to irritation; but let the irritation exist in the knee, vagina, or rectum, the phenomena being reflected to the nose, and we have the paroxysm. In some persons, however, the nasal mucous membrane may not be so sensitive as some other portion of the body, as the vagina or rectum, and in such cases the point of origin of the reflex irritation will be in the more sensitive localities. I do not advocate the theory that pollen alone is the exciting cause, but rather a hyperæsthesia of the nose, which may take on irritation from different sources. In most cases, however, pollen will cause the exacerbation. I think Dr. Roe's method for determining the sensitive spot by the probe an excellent one.

Afternoon Session.

Paper.

LARYNGEAL SPASM.

BY LOUIS ELSBERG, A. M., M. D.

AT the meeting of the American Laryngological Association held in Boston in 1882, in a paper on the "Muscles of the Larynx and their Paralysis," and again, last year, in discussing Dr. Lefferts's description, under the very startling caption, "*New Facts in Laryngology*," of two cases of so-called laryngeal vertigo or laryngeal epilepsy, I made a few remarks on spasm of the larynx. Now I call your attention to the same subject at the special request of our President. I desire, however, to apologize to you for my very imperfect manner of presenting it. I have had no opportunity of writing down what I am about to read until this very morning. If I can do no more, however, I may at least lead you to study, under one systematic head, some very interesting conditions which have been hitherto considered as anomalous and as more or less unrelated; and I promise you that, if I live, I will prepare a more elaborate essay on the subject before our next annual meeting.

Although laryngeal spasm has doubtless occurred in all times of history, our knowledge of it is comparatively recent. As to children,

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who are affected by it more frequently than adults, the first description seems to be only about two hundred years old; and, as to adults, there reigns much confusion concerning it at the present day. The affection is not properly appreciated even by throat specialists, and particular cases of it have been heretofore diagnosticated as cases of paralysis of antagonistic muscles, or recorded, as even members of our own association have done, by such objectionable names as laryngeal chorea, laryngeal epilepsy, nervous cough, choked voice, aphonia spastica, etc.

Definition and Classification.—Laryngeal spasm is the spasmodic contraction of one or more of the laryngeal muscles. It may be unilateral (although I personally am not sure, at this moment, that I have ever observed it confined to one side) or bilateral. It may be simple and affect only one muscle or one group of muscles of the larynx, incompletely or totally; or it may be complicated, and in the latter case involve not only laryngeal muscles, but also the diaphragm, other respiratory muscles, and even other muscles of the body. It may occur either in the domain of the superior laryngeal nerve or in that of the inferior laryngeal nerve, or in both; and it may affect either the adductor or the abductor muscles. Its individual paroxysms may be induced by exercising a particular function of the larynx, or they may come on spontaneously while the patient is only quietly breathing. The special classification that I make is: I. Abductor Spasm; II. Adductor Spasm; and, 1. Deglutitory, 2. Inspiratory, 3. Expiratory (including 4. Phonatory) forms, these being (*a*) simple, or (*b*) complicated.

Synonyms.—So far as I remember at this moment, with the exception of Fraentzel and Cohen (and perhaps Hack), no author has hitherto described laryngeal *abductor* spasm, and all the synonyms that have been used for laryngeal spasm, or laryngospasmus, or laryngismus, or spasmus glottidis, and, indeed, these designations themselves, have been applied to *adductor* spasm only. These synonyms are laryngismus stridulus, laryngeal asthma, stridulous laryngitis, spasmodic laryngitis, pseudo-croup, spasmodic croup, nervous croup, cerebral croup, suffocative convulsion, internal convulsions, angina spastica, and angina stridulosa. As observed mainly in children, and for the same in either children or adults, and for various forms of the same: tetanus apnoicus infantum, intermittent asthma of children, clangor infantum, child-crowing, crowing inspiration, vocal asynergy, disordered co-ordination or perverse action of the laryngeal muscles, aphonia spastica, dysphonia spastica, spasmodic

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cough, nervous cough, hysterical cough, laryngeal chorea, laryngeal vertigo, etc.

ÆTIOLOGY.—It is well to distinguish between predisposing and exciting causes in the production of laryngeal spasm, and among predisposing causes morbidly increased irritability and reflex activity of the nervous system occupy the first place. It is mainly on this account that age exercises a very great influence upon the occurrence of the affection. Although I have seen several cases in infants a few days or weeks old, and from that age up to seventy years, it occurs most frequently after the fourth and before the twenty-fourth month of life. To regard it as exclusively a disease of childhood is erroneous; some forms of it, indeed, have been observed in adult age only, and the excitable condition of the nervous system, predisposing to convulsive muscular action on the one hand, and the small size of the rima glottidis and flexibility of the cartilaginous frame-work of the larynx on the other, sufficiently explain the frequency and gravity of laryngeal spasm in children. As to sex, boys are more frequently affected than girls, but adult women more frequently than men.

Hereditary influence has been looked upon as an efficient factor, but this acts probably only very indirectly. The physical organization of a child is very influential in the production of the disease. Children who are ill nourished and live in badly ventilated rooms are, above all others, subject to the disease. Among the upper classes, hand-fed children are most frequently attacked, while among the poor the affection is most common where the mother is in bad health, or continues to suckle for too long a time. Often the disease comes on at the time of weaning, by the use of farinaceous food which the child is unable to digest. Rhachitic conditions frequently accompany or cause a predisposition to spasm; indeed, according to some statistics, three fourths of the whole number of children affected are rickety. Various cerebral affections, especially hydrocephalus and microcephalus, predispose to the spasm. Enlargement of the thymus body, which at one time was supposed to be the only cause of infantile laryngismus, is occasionally present, but is probably never really causative; but pressure upon the laryngeal nerves in children or adults, whether proceeding from enlargement of the thyroid body, lymphatic glands, aneurysmal or other tumor in the neck or within the thorax, when not sufficient to cause paralysis, may produce spasm. In locomotor ataxia, hydrophobia, tetanus, epilepsy, and chorea, laryngeal spasm is apt to occur; and the hydra-headed neurosis, hysteria, must never be left out of sight as a very

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influential, predisposing, and occasionally even as an exciting, cause of laryngeal spasm. Injuries, foreign bodies (as a little milk during sucking of infants, or a little saliva, or in adults a drop or a crumb of some kind, getting into the larynx), or direct or reflex nervous irritation, may bring on laryngeal spasm. Spasms, more or less severe, are not uncommon in hyperæsthesia of the larynx, and especially in the over-sensitiveness of the mucous membrane sometimes persisting after the removal of inflammation or irritating conditions of the larynx, of tumors, etc. Paralytic conditions of one muscle or set of muscles sometimes excite spasm of associated or antagonistic muscles.

Among the exciting causes in children, catarrhal irritation of the respiratory mucous membrane is an important one, and it is on this account that infantile laryngismus is more frequent in the winter months, especially in March; gastric disturbances constitute another: indeed, one author (Flesch) seems to regard improper (and especially over-) feeding in infants as the only efficient cause; emotional excitements, such as fright, anger, or a crying spell, are sufficient to produce a paroxysm in a child subject or predisposed to laryngeal spasm. In adults, also, emotional causes and shocks of various kinds may act as exciting causes, aside from the exercise of a particular laryngeal function, which is a usual exciting circumstance. In one of my adult patients one of the worst attacks was brought on by being in a high swing; in another by being shampooed and having too much water poured on the head. I remember a young girl, from the northern part of this State, who was sent to me by Dr. Faneuil D. Weisse for treatment, about ten years ago, suffering from complicated expiratory adductor spasm, in whom a very severe paroxysm could be produced on touching with a probe her greatly enlarged and degenerated tonsils. Removing these and a catarrhal condition, which existed especially at the upper aperture of the larynx, completely cured the patient, in whom, however, some months later, chorea appeared, from which, as I afterward understood, she only very gradually recovered.

Symptoms and Diagnosis.—The symptoms of laryngeal spasm differ entirely according to the set of muscles affected. In adductor spasm there is excessive approximation of the vocal bands, or in some other way closure of the laryngeal aperture; in abductor spasm there is insufficient closure of the rima glottidis.

I. *Abductor Spasm.*—Dr. Fraentzel has described a case of spasm of the abductors co-existing with paralysis of the adductors. The

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symptoms were absolute aphonia and absence of the slightest indication of laryngeal sound; even cough was entirely inaudible. The laryngoscope showed the vocal bands, during attempts to phonate and during forced expiration, in the completest inspiratory position. If I remember correctly, Dr. Cohen has exhibited before this association, at its first or second meeting, a similar case; he has recorded four additional cases of apsithuria; but whether or not there existed abductor spasm in these I cannot at this moment say. I have had under my care at least five, and it may be more, patients in whom I positively diagnosticated spasm of the posterior crico-arytenoid muscle. In most of them, perhaps in all but one, there was also more or less adductor paralysis; but in one case, in which there was recurrent complete apsithuria,—i. e., inability to whisper,—and inability to make voluntarily any laryngeal sound whatever, and in which the laryngoscope showed the vocal bands in extreme inspiratory position, etherization, performed for diagnostic purposes, proved the integrity of the adductor laryngeal muscles. This patient could also at other times involuntarily make audible sounds; sometimes he could laugh and cough aloud, etc. The spasm relaxed at irregular intervals, and occasionally came on for a few minutes only, just when the patient desired most to talk.

II. *Adductor Spasm.*—The symptoms of adductor laryngeal spasm vary according to the number of affected muscles, the degree and the form. A laryngoscopical examination is not always possible; when successful, it reveals in some cases nothing abnormal or nothing characteristic; in other cases the image varies according to what particular muscle or muscles may be affected; thus isolated spasm of the lateral crico-arytenoid gives the same image as combined paralysis of the thyro-arytenoid and arytenoid muscles; spasm of all the adductors gives an image somewhat similar to, but more varying than, that of paralysis of the abductors, etc. Diagnosis is sometimes rendered more difficult on account of the co-existence of spasm of one muscle with paralysis of another; but a correct conclusion can be arrived at by the careful consideration of the symptoms and the mirror-observation under varying circumstances.

1. In the simple deglutitory form of adductor laryngeal spasm, the act of swallowing itself may show nothing abnormal, but immediately after it is finished, with or without a little spasmodic cough, more or less suffocation supervenes. There may be so much narrowing of the rima glottidis that the patient may suddenly frantically grasp his throat, struggle for breath, become cyanotic in the

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face, and lose consciousness. All this lasts less than a minute, the patient regains consciousness, can breathe perfectly well, and, until the next attack, can swallow both solids and liquids freely, while after an irregular interval, sometimes an interval of days or weeks, and even months, the mere performance of the act of swallowing may bring on another paroxysm; but I have seen one very marked and unquestionable case of this kind, in which for nearly a week there was complete or total spasm of all the laryngeal adductor muscles *whenever* the patient swallowed, so that starvation stared her in the face. In other cases only the swallowing of solid, and in some the swallowing of a particular article or particular articles of, food, brings on an attack. The dreaded infantile adductor spasm (usually complicated inspiratory spasm) occurs in some children, who are subject to it, on swallowing, during sucking, especially from a bottle. Cases are reported by Flesch in which the use of a nursing-bottle, and even a tablespoon, had to be given up on this account, and food had to be administered with the smallest teaspoon to avoid the spasm.

2. In the simple inspiratory form there are more or less dyspnœa and stridulent noises with every inspiration, while expiration is normal, deglutition free, there is little or no cough, and the voice is unaffected. On etherizing or chloroforming the patient, and during natural sleep, the dyspnœa and stridor disappear, and the attacks often intermit for hours. The laryngoscope shows normal movements of the vocal bands during phonation and expiration, but, on attempted inspiration, the bands, instead of separating more widely when they are in the cadaveric position, approach each other with abrupt and oscillating jerks, sometimes being forcibly pushed against each other and held a moment together. In severe cases the violent and complete closure of the rima glottidis may last long enough to cause unconsciousness before the spasm relaxes. This is a condition which sometimes may be mistaken for paralysis of the posterior crico-arytenoid muscles, especially as it is occasionally combined with that affection; but it may exist without it, and then the abductor muscles may at times be seen to act perfectly. The differential diagnosis can readily be made unless there is such a thing as transitory paralysis as well as permanent spasm. Most of the cases of the heretofore so-called laryngeal vertigo are cases of inspiratory, some of them of deglutitory, adductor spasm.

3. In the simple phonatory form there are no symptoms unless the patient attempts to sound his voice. When he does so, the vocal bands quickly and forcibly approach each other and close the

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rima so completely that the voice is, as Dr. French, though not recognizing the precise condition, has well expressed it, "*choked.*" If the patient persists in the phonatory effort, severe dyspnœa, pain, and other cramps may ensue, and the ventricles of Morgagni may be so forcibly inflated that the ventricular folds appear swollen, *i. e.*, the two folds may be in contact with each other; but, if the patient ceases to try to phonate, all symptoms pass away almost immediately, and respiration becomes free. Sometimes the patient can stutter out a few words or sentences, sometimes he can not make a single sound. Sometimes the words that are pressed out are high and squeaky, sometimes they are husky and low and labored.

4. In the simple expiratory form the attack comes on if the patient attempts to whisper, as well as if he tries to talk or sing; or it may be that the attack comes on, as in a case of Nothnagel's, if the patient attempts to blow out a burning candle; as in a case of Voltolini's, if he coughs forcibly; or as in a case of Jouquière's, if he laughs.

In cases of simple expiratory, including phonatory, spasm, one important point to be noticed is that the patient generally finds it easier to make vocal sounds on inspiration than on expiration, and may gradually fall into the habit of inspiratory phonation. This necessitates a puffing out of inspired air from time to time, which, together with the acoustic character and laboriousness of the patient's voice, are quite characteristic. As the laryngeal muscles under these circumstances are overworked, they become fatigued, and paresis, or even paralysis, of one or more of them ensues. Sometimes the order of occurrences is the reverse, *i. e.*, sometimes paralysis and inspiratory phonation precede and cause the spasm.

In simple expiratory and phonatory spasm the laryngoscope reveals the spasmodic contraction of the adductor muscles, and the image seen varies with the muscle or muscles affected. The lateralis (lateral crico-arytenoid) is generally involved, also the inferior (thyro-arytenoid), with or without the transversus (arytenoid). In a case reported by Hack, the latter muscle was paralyzed, hence the otherwise forcibly closed rima showed a triangular opening posteriorly. Spasm of the anticus (thyro-cricoid) muscle is sometimes found combined with depression of the epiglottis, which depression persisting, even after the spasm may have yielded, leads, especially in children, to apnœa and death.

5. In the complicated expiratory form, the main symptom is a curious cough. Some authors have attempted to characterize

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this cough by its mode, others by its acoustic properties or by both.

a. As to its mode, it is of two kinds, being either (1) a paroxysmal cough, in which, as long as it lasts, hack follows hack in rather quick succession; or (2) a continuing cough, in which the hacks follow each other incessantly at regular intervals. In the first the hacks are sometimes exceedingly violent, from thirty to one hundred and more a minute, and during the paroxysm, which may last for a minute to a quarter of an hour, and even longer, the patient can not stop them. As a rule, the cough is dry, though frequently at the end of a paroxysm there is a little sputum expectorated. The paroxysms occur once or several times a day, usually at irregular, but sometimes at regular intervals; usually spontaneously, but sometimes induced by an external cause, especially emotional or physical excitement or exertion. They do not occur during sleep. In the second kind, the continuing cough, the hacks, not so severe as in the paroxysmal kind, observe a regular and sometimes a very complicated rhythm. The intervals vary from a number of seconds to several minutes, very seldom, however, being as much as half an hour. Like the paroxysmal, the continuing cough usually stops during sleep, though this is not so invariably the case with the latter; but, unlike the former, it can be controlled by the patient while talking, singing, yawning, or swallowing, or during a laryngoscopical examination. Except by such or similar functional exercise, the patient's will has little or no restraining influence; on the contrary, sometimes the hacks are aggravated when the patient tries to suppress them or pays special attention to them, the same effect being sometimes produced when the patient is conscious of being observed by others. Preceding, accompanying, alternating with, or following this kind of spasm, other spasmodic movements, especially of the facial muscles, and also other involuntary and incoordinate twitchings constituting chorea, are sometimes observed. It is this spasm or cough which has given rise to the diagnosis of "laryngeal chorea," a designation which I decidedly advise you never to use.

b. As to the acoustic properties of the cough of the complicated expiratory form of laryngeal adductor spasm, it must be stated that these often are peculiar. They resemble occasionally the barking or yelping of a dog, the quacking of a duck, the lowing of cattle, or crowing, or are shrill, metallic, or croup-like. Usually the noise is quite loud, sometimes so extraordinarily loud that it can be heard at great distances, exceptionally so little loud that it

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can hardly be called cough at all, but is rather a clicking or blowing sound.

On mirror examination, the interior of the larynx shows sometimes a catarrhal condition, sometimes anæmia, but more often no abnormity. The quickly repeated closure and opening of the rima can sometimes be observed with the laryngoscope, but more often it can not.

The diagnosis of the curious cough is not usually difficult if the examiner has assured himself that no organic lesion that might cause it has been overlooked. In addition, it must be remembered that a so-called "nervous" cough, very similar to the one under consideration, is sometimes present in the very incipient stage of phthisis.

6. The complicated inspiratory form is the severest and most dangerous. Its characteristic group of symptoms in children properly constitutes the picture which the designation "spasm of the glottis," or "laryngismus," calls up in the medical mind. This is well enough known; it is described as follows by Mackenzie (English edition, p. 483): "The first attack of laryngismus often comes on at night—frequently toward eleven or twelve o'clock, when the first sleep is passing off. It may occur to a child who up to that moment had seemed perfectly well, but more often the subject of the attack has been peevish and fretful for a few days before, has suffered from loss of appetite, and been restless at night, or a slight 'catch' has been noticed in its breathing. A severe fit of laryngismus may be thus described. A number of short, stridulous inspirations take place, each inspiration being a little longer than the preceding one, and the last being often very prolonged. Suddenly the sound ceases, the glottis is completely closed, and the respiratory movements of the chest are suspended. The flush which first suffused the countenance gives way to pallor and afterward to lividity. The eyes stare or the eyeballs roll, the head is thrown back, and the spine is often bent as in opisthotonus; the veins of the neck are turgid, the fingers close on the thumb, which is bent in the palm, and the hands are flexed on the wrist. Spasm likewise affects the feet; the great toe is drawn away from its fellows, the foot is flexed and rotated slightly outward. In some cases these so-called 'carpo-pedal' contractions are probably accompanied with great pain, and occasionally they are followed by general convulsions. Notwithstanding the severity of the paroxysm just described, it is not necessarily fatal; the patient may survive it, in which case the diaphragm soon relaxes,

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a stridulous inspiration is heard, air enters the lungs, and the spasmodic contraction of the feet and hands gradually yields. But, when the symptoms are of the dangerous character just described, the paroxysm is probably destined to be quickly followed by others, in one of which the child may die. In less severe cases all the symptoms are less marked, and the carpo-pedal contractions are often altogether absent. The attack frequently comes on while the child is at the breast. The infant suddenly stops sucking and looks round, its eyeballs are turned up, and after a second or two a loud crow is heard; the infant then returns to the breast or the bottle, but only to be seized immediately afterward with a similar paroxysm. Sometimes each attempt to suck brings on such an alarming attack of spasm that the unhappy mother hesitates between the alternatives of starvation and suffocation. Again, in other cases, the attack assumes the form of a sudden, almost soundless, spasm, which does not relax till life is extinct. In very rare cases a slight but constant spasm is shown by stridulous breathing. In the common type of cases, when the attack has occurred for the first time at night, the child may appear to be quite well on the following day, and there may be no further return of the symptoms; but it more often happens that another attack comes on a few hours afterward, or at the same time on the following night. Sometimes the second attack supervenes almost as soon as the child has recovered from the first, in which event it is generally more serious, both in its character and duration, than the first. In severe cases, indeed, the paroxysms are so frequent that the child is scarcely out of one fit before it is again attacked. As a rule, there is an entire absence of pyrexia in these cases, though sweating of the head, so characteristic of the rhachitic constitution, is almost always present. Now and then the patient may look healthy, and may even be plump, but, on closer examination, it will be found that the muscular system is weak, that the child is easily fatigued, and that it shows other signs of feeble organization."

Prognosis.—The bases for prognosis are not generally understood. What Flesch says of infantile laryngismus is true of all cases of laryngeal spasm, viz.: "The progress is always doubtful, even in the simplest not complicated cases." I do not mean as to life, but as to recovery, for some spasms do not threaten life at all. The incarceration of the epiglottis between the larynx and pharynx, to which Cohen has first called prominent attention, is, of course, exceedingly dangerous. Last year, in speaking of Dr. Lefferts's two

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cases, in which there was complete or total spasm of the laryngeal adductor muscles, I used these words before you: "To this completeness is due the brief duration of each attack and thereby the safety of the patient. In incomplete spasm, that is, when not all the adductor muscles are affected, partial respiration but incomplete aëration of the blood may go on and lead to a fatal issue unless tracheotomy is performed; but the total spasm produces unconsciousness, whereupon the spasm relaxes and the attack is over." Prognosis as to life is largely influenced by this difference, but (and this is especially true of children) the unconsciousness of total spasm may pass into death. Mackenzie says: "The length of the intervals between the paroxysms is a good prognostic guide; the longer the interval the greater is the chance of recovery." And what Flesch says, in his article in Gerhardt's "Hand-book of Children's Diseases," on infantile laryngismus, amounts to this, that he takes no responsibility for the first forty-eight hours, but then, with strictest following out of his orders, prognosticates certain recovery.

Treatment.—The treatment of laryngeal spasm requires often great promptitude, sometimes operative skill, and always good judgment.

Abductor spasm is so often found to be accompanied by (perhaps in some way dependent upon) paralysis of the adductor muscles that stimulation of these is an integral part of its therapeutics. Indeed, even in the case in which the adductors were proved to be intact, their stimulation by strychnine and galvanism was the only treatment resorted to, and was successful in curing the patient.

In adductor spasm attention must be paid to the paroxysm, to the intervals between the attacks, and to prophylaxis. In infantile laryngismus, regulation of the child's diet is of the utmost importance. Flesch, who has had great success in treating this disease, relies mainly upon it. He commences the treatment with an enema, which, if not effectual, is repeated after some hours. If the child suckles, he prohibits every other food, allows nursing every three hours only, and orders rest, fresh air, and other hygienic care; if the child is hand-fed, milk, at first diluted with an equal quantity of water, and gradually less diluted, is given at intervals of three hours, and only once a day meat-broth, the fæces being examined daily. Cod-liver oil and iron are given to rhachitic children, and farinaceous food is absolutely forbidden.

When, as is usually the case, especially in children, the paroxysm lasts but a very short time, it is best to do nothing but keep the

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patient from harm. Altogether, the various antispasmodic measures and remedies that can be tried are too well known to necessitate my recounting them on this occasion.

There is only this that I want to say to you in conclusion, and I want to say it with great emphasis, viz.: *Ward off asphyxia in all prolonged and life-endangering adductor spasms; thrust the fore-finger deep into the throat to discover whether the epiglottis is impacted, and, if so, release it, draw the tongue forward, etc.; if necessary, catheterize the trachea, particularly by means of Schrötter's three-cornered hard-rubber tubes, and add to this artificial respiration until spontaneous breathing is again carried on; and perform tracheotomy in all appropriate cases without hesitation.*

Discussion.

Dr. Ingals inquired what sized catheters the author would consider necessary for children of various ages.

Dr. Jarvis asked Dr. Elsberg if he did not consider laryngeal growths one of the causes of spasm of the glottis. By that, said he, I mean to say that previous to the appearance of the growth no such condition may exist, but after removal of the growth spasm of the larynx continues, although no vestige of the tumor remains. In the case narrated by me yesterday no trace of the tumor remained after the operation, yet tickling of the larynx with the point of the probe caused very marked spasm. Under ordinary circumstances such spasm did not occur.

Dr. Roe said: I have seen a number of cases of spasm, and have never failed to relieve them by the use of chloroform. Last year I saw a case of spasm of the larynx due to irritation of the arytenoids. The patient was reduced almost to a state of starvation. By removal of the irritable condition, she gradually acquired courage to swallow, but it was only by the moral support of my presence, as I assured her that the means were at hand for her ready relief in case the spasm should again occur.

Dr. Elsberg, in closing, said: I alluded in my paper to hyperæsthesia, such as Dr. Jarvis spoke of, as one of the causes of spasmodic contraction of the muscles of the larynx. The case of Dr. Roe's is typical of one which I have in mind of deglutitory adductor spasm. I also regard chloroform as one of the best means for relieving the spasm, although it really, and especially in children, is a very dangerous remedy, and should be used in adductor spasm with very great circumspection. As to the point raised by Dr. Ingals, with regard to the size of the catheters to be used in children of different ages, I preferably use hard rubber catheters, especially those of Schrötter, but, of course, in a hurry any catheter may be employed which can be got through the rima glottidis. I employ tracheotomy-tubes of six different sizes. They are marked by the instrument-makers in the metric system, but, for convenience of memorizing, they

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are also marked in inches, as follows: One sixth, one fifth, one fourth, one third, five twelfths, and one half of an inch. My rule as to the age for which these sizes should be used is that during the first year I advise one sixth; from one year to three, *i. e.*, one multiplied by two, plus one, the next size; for from three years to twice three, plus one, *i. e.*, seven years, the third size; for patients from seven to fifteen, *i. e.*, twice seven, plus one, years old the fourth size; for boys over fifteen, and women, the fifth size; and so on, the largest size being employed in men or with specially large throats only. The appropriate catheter corresponds to these sizes and ages, only I select them, if possible, a trifle smaller.

Paper.

A CONTRIBUTION TO THE STUDY OF CHOREA LARYNGIS.

By EDGAR HOLDEN, M. D., Ph. D. (Princeton).

THERE is about chorea laryngis, as an independent affection, a vagueness and uncertainty which has attached to its prototype for more than four centuries. Chorea is, in fact, a term convenient but unfortunate; of dubious parentage, of uncertain application, and of unestablished pathology. There is, therefore, about almost any case room for two opinions, and I premise my remarks by the statement that the one now presented is not fully covered by the term chorea laryngis, although at one stage of its progress it would have been styled by an observer a typical case. The spastic inco-ordination, or inequipollence of muscular action, the insanity, as Watson has called it, of the muscles, was well marked, and particularly was the resemblance to ordinary chorea emphatic, in that the perturbance of motion was present without voluntary effort at phonation as well as during the attempt. The antecedent history of the patient gives the case a significance which I trust will justify its selection as a subject.

Dr. S., a physician, fifty-seven years of age, of healthful appearance, and of vigor sufficient, up to this attack, to carry a large practice, the personal management of a great number of rented houses owned and acquired by his profession, an active member of the City Aqueduct Board, and at the same time manager of a flourishing drug business, all of which are mentioned as bearing on the case, noticed, January 1, 1883, a gradually increasing dysphonia, and in two weeks became completely aphonic, without cough, difficulty of swallowing, or pain.

The first note on my record, made January 15th, two weeks after the first symptom, states: "pulse weak and small, posterior surface of epiglottis and anterior wall of larynx subacutely inflamed, all other parts of

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larynx normal." Four days later, under treatment, the inflammation had almost subsided, but a loss of power in the tensors of the cords was well marked. On the 22d this impairment was less notable, but the inflammation had returned, painless but bright in color, and with a margin as defined as is seen in erysipelas or erythema, still confined to the anterior wall and epiglottis, which were hyperæsthetic, and suggested herpes of the mucous membrane. There was some general debility. Twenty-two days from the first aphonia, examination showed irregular choreic inco-ordination clearly and singularly marked without effort at phonation, slightly quieted by an attempt to speak, but increased upon prolonged effort, hyperæmia gone, and the various parts of the larynx of normal appearance. Dysphonia now well marked, as might be expected, but at this time no phonetic spasm.

This condition persisted for several weeks, and for how much longer I am unable to say, as the doctor went to the seaside and subsequently to the mountains, and passed for a few months from observation; but, for the several weeks mentioned, the laryngoscopic appearances were singularly suggestive of the general chorea as seen in young people at puberty, especially as regards the irregular action when no volitional effort was directed to the parts.

The thyro-arytenoids, the arytenoids, and the crico-arytenoids seemed endowed with independent life, twitching and starting in a most erratic manner. There was no peculiar cough, barking or stridulous, for there was not sufficient co-ordination to produce these, nor was the patient conscious of this choreic condition, the inability to speak aloud being the only inconvenience.

In this there was no change at any of the localities visited, although the general health was manifestly improved; nor was there outward evidence of change for a year from the incipiency of the trouble.

At this time, January, 1884, the choreic inco-ordination had disappeared. There was still aphonia, and, although there was no actual paralysis, the tensors were evidently weak, and the laryngeal mucous membrane was of somewhat diminished sensitiveness.

This weakness was progressive and, in March of the present, year, fifteen months after the beginning of the trouble, in spite of a variety of treatment, there was paresis of the thyro-arytenoids and spasm of the lateral crico-arytenoids.

At this stage he was examined, at my request, by Dr. Elsberg and Dr. Lefferts, as he manifested the singular phenomenon of *inspiratory phonation.* Only with great effort and pain could he form a single syllable on expiration, and his efforts to do so while under examination by the gentlemen named, combined, perhaps, with exposure to cold, produced so great exhaustion as to confine him to his room for nine days, at which time he took passage for Florida.

Omitting, for the sake of brevity, all unimportant features, I would

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state that, when examined on his return on the second of the present month, the following condition existed:

Slight redness of vocal bands, no paralysis, but upon protracted effort at phonation a tendency to spasm of the lateral crico-arytenoids. Phonation in a low tone, good for a few sentences only, then dysphonia, with tendency to facilitate respiration by elevating the arms over the head. General condition good; no cough. Careful examination of the thorax showed no evidence of aneurysm, enlarged glands, or cardiac disease, and a high-pitched percussion note and impaired respiratory sounds at the apex of the lung, formerly the seat of disease, were the only morbid or abnormal conditions.

There has been at times, however, a pain in the spine opposite the ganglion of Wrisberg, and also in the epigastrium, which seemed suggestive in connection with the tendency to elevate the arms already mentioned.

No evidence or suspicion of central cerebral disturbance. *A most important feature is this: In a dry, clear, elevated atmosphere all symptoms disappear.*

The previous history is important. On several occasions during the past twenty years the health has been impaired by overwork. The first attack that came to my notice was an apex pneumonia with hæmoptysis, not severe, but accompanied by the usual symptoms, and complete recovery with adhesions.

About ten years ago he had a prolonged and violent attack of the trouble originally well described by Da Costa as "irritable heart." For several days this was mistaken for endo-pericarditis, but sphygmographic observations, with careful physical examinations, eliminated the inflammatory element, and the affection was defined and ascribed with probable correctness to the inordinate use of quinine (twenty grains daily for six months) just prior to the attack. The action of the heart for several weeks was arhythmic and irregular, and corresponded to the description of cardiac chorea spoken of by some authors, but which seemed to me more correctly to be defined as "irritable heart."

Now, in reviewing this case, we have in a man past middle life a laryngeal hyperæmia and hyperæsthesia; a gradually developed inco-ordination peculiarly choreic, in that there was a long-continued insanity of the muscles persistent even without effort at phonation, slowly resulting in paralysis of one set of muscles and spastic contraction of another, the latter, as you are aware, being one of the possible results of long-continued chorea.

We even have the suspicion of cardiac disease so frequently connected with chorea, to which such manifestations have by some authors been ascribed.

Nor is the theory of Hughlings Jackson as to the pathology of

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chorea (the plugging of the vessels that supply the corpora striata) to be lost sight of in this connection, since we might well suppose lesion of the kinesodic tracts a factor in producing the paresis and spasm of muscle here exhibited.

More plausible still is the idea of chorea in connection with the views of Dr. Dickinson, with whose valuable paper, read in 1875 before the Medico-chirurgical Society, you are doubtless familiar. I beg leave to quote: "Post-mortem observations show a general tendency to dilatation of the smaller vessels, especially the arteries throughout the substance of the brain and cord, attended with exudation into surrounding tissues, in some cases patches of sclerosis, and in some small hæmorrhages most advanced in the corpora striata." His conclusion is that chorea depends on a widely spread hyperæmia of the nervous structures, and that the subsequent paralysis is explained by the tendency to sclerosis, a condition not unreasonably to be inferred in this case from the patient's history.

We are also reminded, by the localized herpetic hyperæmia of the larynx which accompanied and probably preceded the choreic disturbance, of the superficial spinal reflexes which cause contraction of special muscles when the cord is healthy, and which, when the irritation is prolonged, may produce irregular action.

With all this, however, it is manifest that we should not clearly define the case by the term chorea laryngis, except in so far as it describes a condition grafted upon some other affection of the system, using the term precisely as we use the words aphonia, cyanosis, or anæmia.

In all cases of persistent and irregular action of the laryngeal muscles, irritation is an essential factor; but in our search for a cause we are not so restricted as in a general chorea, inasmuch as the anatomical nervous structure of the supply, while complex, is restricted in area.

Theoretically, the irritation should be either at the origin of or at some point in the distribution of the pneumogastric nerve, or in the course of its branches; and, as experience has demonstrated that most of the motor perversions from such irritation are symmetrical, we have the multitude of peculiar coughs, clonic spasms, or aphonias, and but few evidences of inco-ordinate action essential to chorea. If central, as from minute emboli, effusion, or hyperæmia, we should be quite likely to have development of symptoms at the ultimate distribution of the pneumogastrics, the heart, the lungs, or the stomach. If originating in the mucous membrane of the larynx, the apices of

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the lungs, the glandular structures which might press upon the laryngeal nerves, the stomach, or the heart, the motor distribution through the laryngeal nerves might alone be affected.

If we accept either of the prominent theories of Dickinson, Hughlings Jackson, or Brown-Séquard, as to chorea, the character of the central lesion could hardly affect alone the distribution of the laryngeal motor nerves, and in any given case, therefore, we should give preference to the belief that the trouble was reflex. In most cases, indeed, we should be justified in giving preference to a proximate and superficial, and not a remote or deep reflex, since in the latter case, as in enlargement of bronchial glands, aneurysm, cardiac hypertrophy, etc., we have a grosser irritation and the familiar short cough, or the not infrequent aphonia with no inco-ordinate action.

In reviewing a considerable experience with cases of chorea, I have been struck with the variety of localized choreic manifestations—for example, of the trapezius of one side; of the eyelids of one side; of groups of or single muscles in an arm or leg, on the thorax or abdomen; in boys and girls at puberty, in the levatores and tensores palati, where the contraction gives rise to the production of strange guttural noises; but in all these there has been either organic change, or the general condition and aspect of the patient have been suggestive of such trophic disturbance as justified the term chorea, and this in direct proportion to the avolitional character of the muscular motion.

Inco-ordination occurring when the will is directed to the parts suggests that still more indefinite affection—hysteria, or the lesion of sclerosis, where, indeed, the distinctive peculiarity is inco-ordination *only* upon volitional effort.

In any chorea we expect a lowered state of the nervous system, the absence of a direct irritant (for the convulsive twitching of the muscles of the shoulder from a bullet imbedded in the palm while choreic is certainly not chorea), and a choreic condition or tendency which would be manifested at times in other parts of the body; and to apply the term to a laryngeal inequipollence we might well proceed as in general chorea.

In the one case we eliminate the saltatory phenomena as belonging to emotional insanity or hysteria—the electric chorea of Dubini, the myelitis convulsion of Hörtel, the tarantism of the sixteenth century, and the tigretier of Abyssinia—as phenomenal, although choreic exhibitions of hysteria, and also the countless movements from the

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uncontrollable gigglings and grimaces most familiar, to the jerks and starts of the epileptic which have been included under the name.

In chorea laryngis we can, without violence, in a similar way eliminate most of the peculiar barking coughs often hysterically contagious—the asynergy of Krishaber common in laryngeal tumors, the spasmodic laryngeal cough arising in subacute laryngitis upon change of position, the laryngismus of tubercular meningitis or effusion, the reflex spasm from goître, and a multitude of temporary phenomena often conveniently termed chorea laryngis—and approximate the definition of a doubtful term as "a morbid manifestation or condition with two essential qualities":

1. Ability to produce, but inability to protract, co-ordidinate action.

2. Irregular and unequal action, without as well as with volition.

These may arise from either of three sources:

1. A choreic temperament and condition, with tendency to manifestation in other groups of muscles—i. e., a localized manifestation of general chorea.

2. A trophic impairment developed in the course of some other affection or disease.

3. Irritation of the laryngeal mucous membrane, or of the terminal filaments of the pneumogastrics—the one a superficial, the other a deep reflex.

To either, and, perhaps, to both the latter, the case to-day presented belongs—a chorea laryngis, yet presenting the idea of a symptom only, instead of a distinct disease.

Still, I do not believe with Massei that we should discard the term because it describes a condition and not a disease. Asthma is not the less a veritable affection because the term is misapplied to cardiac or gastric dyspnœa, to pulmonary œdema, bronchitis, or aneurysm; and chorea laryngis, while, like its prototype, most frequently a functional and symptomatic disorder demands nevertheless a name, and we will accomplish much if we secure for it correctness of application.

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Paper.

THE GALVANO-CAUTERY, COMPARED WITH OTHER MEANS OF DESTROYING THE MUCOUS MEMBRANE OF THE NASAL AND PHARYNGEAL CAVITIES.

By E. L. SHURLY, M. D.

THE aim of the following remarks is to call attention, first, to the conditions necessitating the employment of the galvano-cautery, or agents of similar nature; second, the value of this agent compared with others of its class; and, third, its intelligent application.

First, then, cases of nasal, naso-pharyngeal, and pharyngeal disease exhibiting hypertrophy of the mucous membrane, hyperplasia of the glandular tissue, neoplasms, or ulceration, require for successful local treatment the application of *some* destructive agent, either mechanical or chemical. This proposition is so generally conceded that no argument is needed. But, inasmuch as our fallibility and enthusiasm often conspire to defeat good judgment—thus leading to erroneous conclusions and acts—let us stop for a moment's reflection. Aside from the function of olfaction, the nasal passages are certainly a part of the respiratory apparatus—in fact, the vestibule of this apparatus. These bony canals are lined with tissues of special anatomical construction—in short, at the anterior part, very like the erectile tissues of other parts of the body. The physiological purpose is plain; no other arrangement could be so well adapted for warming the inspiratory current of air, and straining from it deleterious material. Yet I fear we often lose sight of this in our eagerness to find and relieve nasal stenosis. In the cold, damp atmosphere of our northern climate I can conceive of no reason why the nasal mucous membrane should not be *well filled with blood*, to act as a heating apparatus for this cold air to pass over, that the more important and delicate respiratory organs below may be protected. Hence the important point arises, When ought we to destroy this tissue, or a part of it, and thus replace the normal with an inelastic, almost non-vascular, connective tissue? Certainly not always when it is to *our view* swollen. I believe, so far as this is concerned, that we should *positively* discover whether the mucous membrane is only temporarily swollen from extra conditions of the atmosphere, or an unhealthy condition of the economy, or whether there is a *permanent*

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hypertrophy (hyperplasia) transcending the physiological limits and producing a *veritable* stenosis of the nasal passages incompatible with the healthy performance of the respiratory function, etc. If the nasal passages are of sufficient amplitude, even a *moderate* hypertrophy is preferable to a too roomy space lined with atrophied mucous membrane and connective tissue, provided the subjective symptoms of extra discharge, cough, etc., are not prominent. But if, on the other hand, there is a real hypertrophy of the glandular or mucous structures, compromising the space too much, or, by pressure on contiguous parts, giving rise to other local or general disturbances, then there is no question as to the proper use of cauterizing agents. However, I think, in *all cases*, no more of the mucous membrane ought to be destroyed than is absolutely necessary, for the reason that *cicatricial tissue* in the nasal cavities or pharynx does not subserve the purposes of nature, and, indeed, may lead to that worse and more incurable condition—atrophy and chronic laryngitis.

I frankly confess to having committed this error—of destroying too much mucous membrane—in some cases; and have been chagrined to find, after a time of complete respite from local trouble on the part of the patient, a progressive chronic pharyngo-laryngitis taking place.

With regard to neoplasms, or growths, their speedy extirpation—mechanically if large, or with caustics if small—is, of course, the proper rule of practice. Likewise, ulcerations should be thoroughly cauterized for the conservation of neighboring tissues.

Coming to our second point, let us, if you please, arrange the destructive agents under consideration into three classes, viz.: mechanical, chemical, and electrical.

Among the first the knife and scissors need not detain us, inasmuch as they have been very generally discarded, owing to their inability to meet the ends sought for, excepting in a few special cases. The forceps for either the nasal or naso-pharyngeal cavities merits the objection, so often urged, of imposing great pain upon the patient, besides—what seems to me important—tearing and destroying unnecessarily a large amount of tissue, thereby promoting, possibly, the subsequent disorders already mentioned.

In the case of tumors even, I think the forceps ought not to be frequently used. Regarding that very useful instrument, the wire snare, in my hands it has been far preferable to anything else for the removal of polypi. But for the removal of exuberant mucous membrane it has not served me well, because it has always been my

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ill-fortune either to fail in snaring the part I desired to seize, or, what is worse, to take away much that I ought to have left; this has been my experience even in the treatment of hypertrophy of the mucous membrane of the posterior ends of the turbinated bones. I have used either the original Jarvis's snare or Dr. Bosworth's; and possibly these results have been from want of skillful manipulation rather than any defect of the method or instruments.

The great objection to chemical agents, speaking of them as a whole, seems to be that, when properly and cautiously used, they fail in destroying *enough* of the tissue, or, in other words, do not destroy deep enough unless too frequently and too persistently applied, when such a reactionary irritation is produced as to be positively baneful as well as unbearable. Of course, I am considering these in their general aspect. There are conditions of pharyngeal disease in which the local application of chemical caustics is preferable.

The last class, electrical, comprises only the galvano-cautery, which, it will be easily seen, is my preference for general use in the conditions under consideration. I have been using this agent more or less during the last eight years, and I believe have had ample opportunity for studying its good and ill effects, as well as the difficulties of its manipulation. It seems to me its great merit over the other means mentioned consists in the precision with which one can touch at will just the offending tissues, at the same time regulating, with tolerable exactness, the extent of destruction; this, then, with proper manipulation, reduces the chances of doing mischief to a minimum—a very great desideratum, provided some of the foregoing conclusions are correct. Besides this, as you have all undoubtedly observed, after cauterization by *this means* there is a reaction in the surrounding structures more nearly comporting with normal vitality than after the use of any other similar agent, while its painlessness, it may be added, allows of much more time to do the desired work carefully. The danger of its use, so often urged, entirely vanishes when the proper instruments and ordinary skill in manipulation are brought into play.

In daily practice with the galvano-cautery there are not a few difficulties in the way, perhaps the principal of which is the trouble and care, as well as the uncertainty, of the batteries mostly in use; this, of course, is a serious objection, since a good steady stream of electricity, of strong electro-motive force, is absolutely necessary to obtain the proper result. I have used until lately the "Byrne battery," which has served tolerably well, excepting at times. I now

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use the common thermo-electric pile, similar to the one constructed by Dr. Cutter, which is immersed in a large glass cell when in action.

It consists of eight zinc and nine carbon plates, each seven by five inches, and bolted together. I have had attached to this a long-thread feed-screw, by which the elements can be immersed as gradually or as little as may be desired. Of course, this makes a very heavy and clumsy-looking instrument, but it has the advantages in its favor of being cheap, always ready with a very little trouble, and furnishing all the electro-motive power required.

In applying electrodes to the nasal passages from in front, I have found it much better to apply the *edge* to the mucous membrane, always commencing as far back as desired, and drawing steadily forward, thus making a line. If the broad surface is applied, there is danger of burning too much tissue on the surface with a strong stream, and with a weaker one of burning only the surface, which is of no use whatever, since the mucosa *must* be penetrated and the sub-mucosa cut in order to insure success.

When the naso-pharyngeal cavity is the subject of treatment, the soft palate should *always* be held forward for a cauterization of any considerable extent. In cases where such a rapid secretion of watery mucus is poured out as to cool the incandescent electrode before it can cut through the surface, a little pledget of absorbent cotton held for a moment or two upon the part will usually remedy the evil.

In the treatment of enlarged follicles of the pharynx I have found no application so efficient as the galvano-cautery.

In conclusion, I would again ask your attention to the following points, viz.: To injure or destroy as little of the mucous membrane as possible, and to be sure to cut through the surface as narrow a track as will suffice.

Discussion.

Dr. Jarvis.—Out of justice to the method proposed by myself for the removal of hypertrophied tissue from these cavities some time ago—namely, the use of the needle and wire—I desire to make some remarks. So far from its being impossible to limit the amount of tissue to be removed by this means, I do not know of any other method by which the amount of tissue to be excised can be so accurately gauged. Only this morning I had an opportunity to demonstrate the utility of this plan in a case of hypertrophied tissue of the turbinated bone, and the removal, I believe, could not have been accomplished by any other method. The galvano-cautery certainly would not do it, and, from what I have witnessed of its effects in the hands of others, the amount of cicatricial contraction which it produces is much greater than that arising from the

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wire and needle. I have never seen cicatrization result from the use of the latter method in the anterior nares. I consider it of great importance, as pointed out by Dr. Shurly, that the amount of tissue to be removed should be definitely limited. I always make it a rule to leave as much of the turbinated tissue as possible, in order that the normal function of the membrane may be duly carried on.

Dr. SAJOUS.—I have used the snare a great deal, and have never yet had the so-called dry condition result. I have used the needle, and have found it also very serviceable, especially in those cases in which the hypertrophy of the anterior part of the nares is great, and in which the galvano-cautery can not produce a sufficiently well-marked effect without destroying too much surface. Not much pain attends the use of the needle, and it gives much better results than the cautery.

Dr. ROE.—In many respects I agree with Dr. Shurly concerning the galvano-cautery. It is an agent of great good in many cases, but I think it should also be used with great caution and in properly selected cases. In suitable cases no other method of treatment can take its place. For instance, in the treatment of hay fever the battery is the only means by which the desired result can be produced. It will relieve hyperæsthesia in cases in which there is no hypertrophy, simply by scarifying the tissues. The inflammation which follows its use produces exactly the desired result, while transfixion and removal of any hypertrophic tissue may not have the desired effect. In cases, however, in which there is hypertrophied tissue, I first remove it with the snare, and then employ the battery.

Dr. SHURLY.—I believe I have confessed in my paper that my failure with the snare has not been so much the fault of the instrument as of a want of skill in its manipulation. I have tried its use, as Dr. Mackenzie has, in affections of the posterior end of the septum, and have found it unsuccessful. In skilled hands Jarvis's snare may be preferable, but I believe most of us can do better with the cautery in limiting the amount of tissue to be destroyed. Formerly when I used the snare I always destroyed more tissue than I desired, and I have therefore abandoned it, except in the cases of neoplasms to which reference has been made.

Paper.

A CONTRIBUTION TO THE STUDY OF ADENOID VEGETATIONS AT THE VAULT OF THE PHARYNX.

BY BEVERLEY ROBINSON, M. D.

IN the short paper which I shall read before you I do not intend to give an exhaustive description of adenoid vegetations in the upper portion of the pharynx. My purpose is more restricted, but may be, perhaps, on that account, more interesting. I wish merely

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to narrate in a brief manner something of my own observation and treatment of these growths. In some particulars, at least, it seems to differ slightly from the recorded experience of other specialists in this country and of those abroad. Bosworth and Swinburne in the United States, and Meyer, notably, in Denmark, have met with adenoid vegetations very frequently. Thus, Dr. R. E. Swinburne writes,* at the Harlem Eye, Ear, and Throat Infirmary, since its organization in January, 1882, up to September, 1883, 148 patients applied on account of throat and nasal affections, and of these, 15, or 1 in 10, had adenoid vegetations. In 325 *throat* and *ear* patients he found 42 cases of glandular hypertrophy. Meyer reports, out of 2,000 children examined in Copenhagen, the existence of these vegetations twenty times. My own experience does not correspond with that of either of the authors just cited, since I have met only infrequently with these growths. It is true that I have not counted as such a development of tissue which is very similar in appearance, and is possibly not very unlike in structure to the follicles one sees in chronic pharyngitis. Those growths which I call vegetations are of larger dimensions and more closely juxtaposed. I have seen and operated upon a case in a tolerably successful manner, during the course of the past winter, in which the adenoid growth was flat, several millimetres in thickness, and included the entire area of tissue between the two Eustachian orifices. As to instances of the marked fimbriated variety to which Meyer refers, these, as well as I remember, I have not seen. Only a few, relatively, of the large, pendulous vegetations, with smooth surface and pink color, have ever come to my throat clinic—formerly during several years at the Manhattan Eye and Ear Hospital, and during the past four years at the Out-door Department of the New York Hospital. One of the most remarkable of these growths that I have seen was discovered by me in a young woman at St. Luke's Hospital, April 30, 1882.† The adenoid hypertrophy was readily removed by means of Bosworth's modification of Jarvis's snare, and was afterward presented by me at a meeting of the New York Clinical Society. The following is a brief history of this case:

E. P., twenty-four years old, single, saleswoman, born in the United States, entered St. Luke's Hospital, March 8, 1882. One year before entering the hospital she contracted naso-pharyngeal catarrh, which had never left her. Physical examination showed catarrhal discharge from

* "Med. Record," October 6, 1883, p. 373.

† See the records of the hospital.

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pharynx, nasal polypus in right nasal fossa posteriorly, discharge from ears (due to eczema), and excoriation of parts about external meatus.

April 3d.—Examination of larynx showed some inflammation and clubbing of left arytenoid cartilage.

13th.—Patient has considerable pain in throat and some huskiness of voice. Posterior rhinoscopic examination shows ulceration of mucous membrane covering inferior turbinated bone on left side. Adenoid growth just behind upper portion of septum and apparently adherent; both Eustachian tubes open and full of mucus.

26th.—Raised a little blood this morning.

30th.—Adenoid tumor above described removed by aid of snare écraseur (Bosworth's modification of Jarvis's), the loop being introduced through the naso-pharyngeal space. The tumor was easily engaged in the loop, and came away with slight hæmorrhage. The growth as removed was about the size and shape of a chestnut, and had apparently a distinct pedicle.

May 12th.—No vestige of the tumor made out. A few adenoid growths were seen on the posterior portion of the septum. Dr. Robinson operating, rubbers were passed through the nose and drawn through the mouth and fastened behind the head. In this manner the soft palate was drawn forward and upward out of the way. A small, blunt uterine curette, bent to the proper angle, was passed backward and upward through the fauces and into the posterior nares until the growth was reached. It was then a very simple operation to scrape it off. Little or no hæmorrhage resulted, and the patient suffered only slight pain.

20th.—No sign of return of the tumor. Cough has disappeared. No discharge from the ears; still slight clubbing of left cartilage of Wrisberg, with considerable redness. *Discharged improved.*

If I were merely to consider my own experience in private, hospital, and dispensary practice, I should state emphatically that adenoid vegetations of the type just described are relatively rare in New York city. I have been told, however, by a friend and distinguished brother specialist of this city, that he has already operated upon such hypertrophied masses very many times. Singular, also, to relate, I have yet to encounter a single instance in which one of these growths compressed the Eustachian orifices to any appreciable degree, and occasioned impaired hearing in this manner.

I presented a young woman at the New York Practitioners' Society last spring * who, with a pronounced deflection of the nasal septum, had a large, single pendulous adenoid growth hanging directly down from the vault of the pharynx, behind the posterior border of the nasal septum, and partially obstructing both posterior

* See report of case, "Med. Record," July 21, 1883.

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nasal orifices. In this case there was *deafness* in one ear, but it was not caused by pressure from the glandular hypertrophy, nor was the hearing defective on the side where the nasal passage was occluded by the deviated septum, and the voice was *not at all affected.*

The adenoid hypertrophies I have observed have usually been moderately soft to the touch, but not very sensitive, and have rarely bled, even a little, when examined by the finger with a moderate degree of gentleness. Certainly the use of a spray or douche from the posterior nasal syringe has never caused them to bleed. These growths have ordinarily been covered with more or less grayish, viscid mucus, which has been difficult to expectorate, and has occasioned some of the uneasy sensations from which the patients suffered. They have not, however, caused so much mucous discharge from the post-nasal space as some forms of nasal catarrh with smooth but general hypertrophy of the nasal and naso-pharyngeal mucous membrane do. These patients have often muffled and defective speech. As to the patients' inability to pronounce certain consonants in an intelligible manner, a fact which has been so much insisted upon by Meyer, this statement I am unable to corroborate in *an absolute* sense by any case I have observed. It is true, however, I have remarked that the enunciation of certain words was wanting in clearness, and there was a peculiar, stuffy pronunciation, which was, perhaps, specially noticeable whenever the nasal consonants were articulated. This partial loss of function is explained by the fact that the nasal passages have lost their normal resonance. From the condition named to that of the individual who has the true "dead" voice, so-called, is not very far.

Besides the marked defect of speech to which I have just referred, the patient is apt to complain of a sensation like that produced by a foreign body in the naso-pharyngeal cavity. Whenever I have remarked any very great amount of thick grayish or greenish mucus in this region, I have also found, on further examination, a considerable degree of hypertrophic nasal catarrh. The flattened, pinched, contracted appearance of the nose, as well as the broader configuration at its base, which has been described as characteristic, must exist, as I believe, in but few cases—since I have never met it so pronounced as in any way to be properly considered pathognomonic. Inasmuch, however, as it is not uncommon to have chronic hypertrophic nasal catarrh present at the same time that there is preexistent or concomitant glandular hypertrophy at the vault of the pharynx, it can be appreciated how it is that we may have occlusion

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of the nasal passages which is quite as much caused by the thickened pituitary membrane as by the hyperplasia of adenoid tissue in the retro-nasal space. If both these morbid conditions are present, the lower portion of the nose may be flattened in an antero-posterior direction, while the upper portion may be more pinched from side to side than it is normally. Thus the nose may be in reality broader below than it should be, and it seems particularly exaggerated when compared with the upper portion. Whenever the hearing has been affected, the aural defect has been, in my experience, occasioned by extension of the accompanying catarrhal affection of the naso-pharynx. In this belief I am glad to find myself in partial accord, at least, with Dr. Swinburne, who states * that the aural disease accompanying adenoid vegetations of the vault "is caused almost, if not entirely, by an extension of the inflammation during an attack of acute naso-pharyngeal catarrh to which patients in this condition are predisposed." If the aural catarrh involves the middle ear and has become chronic, the patient may suffer from vertigo and tinnitus. This complication of glandular hypertrophy is, however, not so frequently met with as is generally believed. In two private patients and in one hospital patient in whom the adenoid hyperplasia at the vault of the pharynx was excessive, there was no perceptible diminution of the hearing power. This statement seems to be opposed to that of Meyer, since this author affirms that the best place for observing adenoid vegetations is *among ear cases.* Out of 102 instances of glandular hypertrophy observed by him, 72 individuals suffered from disease of the ear. In Dr. Swinburne's practice at the Harlem Infirmary, "179 patients suffering from middle-ear disease applied to him for treatment, and of these, 27, or 1 in 6½, had adenoid vegetations." In a large proportion, indeed, of all cases of adenoid vegetations the ears were found diseased. The exact proportion given by Dr. Swinburne is twenty-seven out of forty-two cases, or about three fifths of the total number seen by him. "Of the twenty-seven ear cases, there were perforations in one or both drumheads in fourteen." The only way in which I can reconcile the reported observations of Dr. Swinburne with my own experience is by assuming that we do not agree as to precisely what should be considered as an *abnormal* growth of adenoid tissue in the pharynx, and in regard to this point there are considerable personal differences of opinion on the part of several writers. At what stage of development the morbid change commences it is indeed somewhat difficult accurately

* *Loc. cit.*, p. 374.

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to determine, for the reason that here, as in other regions of the body, there are *individual idiosyncrasies.* While in many persons there are marked elevations of tissue in the pharyngeal vault, which are separated by fissures or depressions, in others, equally healthy, the normal aspect is that of a tolerably smooth, uninterrupted surface. Bosworth* remarks, "just as we see instances of faucial tonsils where the organs scarcely are seen between the pillars, and again find those in whom the tonsils are quite prominent organs and occupy a moderate space in the throat, so we have almost similar varieties as regards size of the pharyngeal tonsil." In this same line of thought a reviewer (H. R. Swanzy) of Loewenberg's brochure † "On Adenoid Tumors in the Naso-pharyngeal Space" writes very wisely as follows: "Indeed, in some instances it is difficult to decide whether we have before us an extreme, but yet physiological, development of the pharyngeal tonsil, or a commencing hypertrophy of it. From a clinical point of view, therefore, a diseased condition need not be admitted, unless the increase in volume of the tonsil be such as to interfere prejudicially with the functions of the naso-pharyngeal cavities." In this connection it is but fair to add that others than Dr. Swinburne have lately described the great frequency of aural complications in cases of adenoid vegetations. In England, Woakes maintains that five per cent. of persons suffering from these growths have aural disease. He further states that, when the vegetations are seated at the vault of the pharynx, the aural complication is apt to be suppurative otitis, with perforation of the drum, and the after sequelæ of aural polypus; whereas, if the hypertrophied glandular tissue be situated on the posterior wall of the pharynx, it is accompanied by great thickening of the adjacent mucous membrane; and this implies "a complete mechanical occlusion of the Eustachian tubes," which ultimately produces chronic non-suppurative inflammation of the middle ear, with sinking in of the membrane and severer forms of deafness. In those cases of adenoid vegetations of the vault I have seen, *suppurative* otitis has not occurred. As to *non-suppurative* inflammation of the middle ear, occurring as a consequence "of a complete occlusion of the tubes," this explanation I can not admit to be true. Further, I take exception to the view which calls chronic follicular pharyngitis (as I believe) adenomatous disease, or post-nasal vegetations.

It is unusual, however, to encounter pronounced adenoid vege-

* "Jour. of Otology," vol. iv, January, 1882.

† Paris, Delahaye & Co., 1879.

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tations at the vault of the pharynx without at the same time finding very marked follicular pharyngitis. This fact should show us the value, whenever the latter disease is discovered, of examining the naso-pharynx by means of the small mirror, as with the index-finger. Not always does the hypertrophied glandular tissue cause symptoms sufficient to direct attention to it.

Sometimes it has been discovered almost by chance, or while search was being made as to the condition of the Eustachian orifices in old aural diseases, or of the naso-pharynx in chronic faucial inflammations.

In one family under my care I have noted an evident hereditary influence in the transmission of adenoid vegetations. Thus, the mother had adenoid hypertrophy when a girl, as she believes, and recovered from it without an operation. Two children out of five are now subjects of it—one, a girl, eighteen years of age, having it to a very pronounced degree; the other, also a girl, ten years of age, having it only to a moderate extent. Meyer writes: "I have eleven times found two, seven times three, once four children of the same family affected, and in not a few cases one or both parents were, or had been, suffering in a similar way." The treatment of these vegetations should vary in accordance with their form, size, and situation In several instances I have performed, with moderate success, the operation to which Meyer first directed attention. Usually those cases which I have selected for this procedure have been examples of flat, sessile growths of small size. By means of tolerably thorough scraping, repeated one or more times, I have unquestionably benefited these patients. Thus far I have never in this manner effected an absolute cure. It may be that my lack of entire success is attributable to the fact that I have left behind a certain amount of unhealthy tissue. While this may be true, I will add that I have removed all the tissue that it seemed judicious to remove, and yet the symptoms of fullness and weight in the posterior nares have only been in part modified. Within rational limits, Meyer's operation appears to me perfectly safe and legitimate. I do not consider it as one universally applicable in the treatment of these vegetations, and would be inclined to limit its sphere of usefulness to those of the variety referred to. While other cutting operations than that of Meyer have been proposed by different writers, they do not inspire me with so much confidence. Moreover, I would insist that *every* cutting operation performed at the vault, or on the side-walls of the upper pharynx, should be guided by the finger or the rhinoscopic mirror. Otherwise too much or perfectly healthy tissue will probably be cut off, which

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can but be detrimental to the patient. There are many cases, however, in which, owing to obstruction of the nasal passages by bony growths, deflection of the nasal septum, or simple hypertrophic catarrh, Meyer's ring-knife can not be used. There are also many instances in which, by reason of great intolerance of the patient to the finger, and where the rhinoscopic mirror can not be employed to guide the direction of the cutting-knife on account of the small space between the free margin of the soft palate and posterior wall of the pharynx, when Thomas's blunt-wire uterine curette, bent so as to adapt it to the parts involved, will prove very serviceable. Not having a cutting edge, it may be repeatedly scraped over the vault of the pharynx in the median line, and a short distance to either side, until the sessile growths situated in this region are completely broken up or disorganized. In several cases I have had great satisfaction in the use of this curette, and, on account of the facility with which it can be manipulated, believe it deserves to be more commonly employed. A few days after the blunt curette has been thoroughly used, it is well to apply either fused nitrate of silver or the galvano-cautery to the remains of the adenoid growths.

In cases in which Meyer's knife can not be used by reason of obstruction in the nasal passages, or in those where the patient is an adult, with a tolerant throat and a capacious naso-pharynx, the galvano-cautery can be employed with great advantage. To obtain the best results from its use and avoid certain unfortunate complications require considerable manipulative skill, which can only be acquired by repeated operations. In my opinion, its use is particularly adapted to the treatment of sessile growths of moderate size, the wire écraseur of Jarvis being better suited to operations upon pedunculated growths. Whenever the galvano-cautery is employed, it can only be applied with accuracy and without probable evil consequences when the soft palate is drawn forward and fixed in position, either by Wales's method or by means of Swinburne's mouth-gag. This latter instrument, which is a modification of Whitehead's, is said by its inventor, after using it in fifteen cases of adenoid vegetations of the pharyngeal vault, "to be all that is desired." The modifications consist mainly in the additions of palate retractor and a bar with a slot and side-bolt. The tongue depressor of Whitehead's gag is left out. I have used this gag on one occasion in a very tolerant patient, and feel compelled to say that my experience was anything but successful. The palate retractor could not be kept in place, but continually lost its hold of the soft palate as soon as some

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traction was made, and, so far as the view of the naso-pharynx was concerned, did not give anything like so satisfactory a view as Wales's rubber cords. Perhaps other cases may enable me to reverse my unfavorable judgment of this improved mouth-gag. I have not found it necessary to give ether to adolescents or adults when I have operated. In unruly children I can understand that at times it may be essential. Except in very rare instances, I doubt the expediency of employing the galvano-cautery for adenoid growths of children in preference to the curette or snare. When the two last instruments are employed, a suitable mouth-gag may, perhaps, be advantageously fixed in the mouth prior to the operation, so as to restrain a child who would otherwise obstinately shut his mouth and prevent the operator's eyes from seeing, even in part, where the curette or the loop of the snare was carried and applied. In order to have good results with the galvano-cautery, it is important to employ a convenient handle and suitable cauterizing points or spirals. The best handle with which I am familiar is that of Leiter, and a small-sized spiral, about two to three lines in breadth, will be well adapted to most cases of adolescents. The stem of the instrument which unites the spiral with the handle should, of course, be of small diameter and proper curve to be introduced into the naso-pharyngeal space. An instrument composed essentially of two copper-wire conductors, separated from each other by some insulating material like ivory, bone, or mica, bent at nearly a right angle toward its distal extremity, terminated in a small spiral of platinum, and wrapped with ordinary white cotton thread, or a thin layer of absorbent cotton and cotton thread, is the form I have most frequently employed. The protector and spiral spring in Dr. Lincoln's electrode make the instrument altogether too bulky. If the protector is made of bone, it is liable to crack and break off when the platinum spiral is heated sufficiently; if it is made of hard rubber, it softens or takes fire. While the protector shields the adjacent parts from being burned in the event of a necessary effort of gagging or deglutition, a sudden movement by the patient, or a lack of skill on the part of the operator, my efforts thus far to make one which would be really practical have been only partially successful. The one I present to the society is made of the outer layer of asbestos, does not chip or break off easily, is smaller than Dr. Lincoln's, and is not a very good conductor of heat, although in none of these respects is it at all so perfect as I desire. The platinum spiral, with its protector, should be introduced, *cold*, behind and above the soft palate, guided by the rhino-

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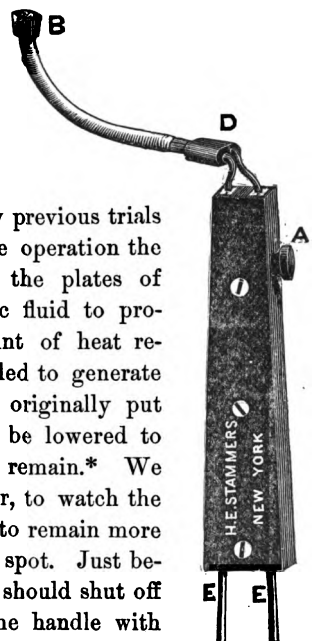
scopic mirror. So soon as it is visible in the rhinoscopic mirror, and its proper location established, the electric current should be passed. The platinum spiral should not be heated beyond a red heat, because it would burn too rapidly and be apt to burn more deeply than we wish in a given point. The amount of heat necessary to bring the spiral to a proper temperature can be found out accurately, before the operation is begun, by previous trials with the battery. At the time of the operation the assistant is cautioned only to lower the plates of the battery far enough into the caustic fluid to produce, as nearly as possible, the amount of heat required, or else the amount of fluid needed to generate the proper degree of temperature is originally put into the cells, so that the plates may be lowered to the bottom of the cells and allowed to remain.* We shall be obliged in either case, however, to watch the platinum spiral closely, and not allow it to remain more than a few moments in any particular spot. Just before we wish to withdraw the spiral we should shut off the current by stopping pressure at the handle with the right thumb, and usually we can bring the instrument out of the mouth rapidly and without touching the palate, fauces, tonsils, cheeks, or lips. When the patient makes a sudden effort of gagging or deglutition, or when the soft palate is not held tight enough by the elastic cords, the palate may rise up against the hot spiral, if unprotected, and be burned superficially. This, in my experience, has never resulted in the permanent injury of the patient.



The operation with the cautery is not very painful, and, if properly done, the hæmorrhage is slight. It has to be repeated on several occasions, at intervals of a week or more, in order to rid the patient entirely of the growths at the vault of the pharynx, from which he suffers.

I have yet to see an acute inflammation of the middle ear following its use—such, in fact, as occurred in the practice of one member of our association. This serious complication has been avoided, I

* Lennox Browne writes that the only way to insure regularity of the cautery power "is to employ a rheostat to measure exactly the heat of the wire."

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believe, by the care I have exercised, both during and subsequent to the operation. When the vegetations were very close to the Eustachian orifices, I have not allowed the incandescent wire to remain in this position more than a few seconds on any particular occasion. When the operation was finished, I have plugged the external auditory canal softly with cotton-wool, and obliged my patients to go home immediately and remain in the house twenty-four hours. I have never had occasion to do more than this, although, of course, in case of need it would be wise to make use of an anti-inflammatory nasal spray (as that of Dobell), and instill a few drops of solution of atropine into the ears. In case the pain in the ears continued in spite of this treatment, and evidence were given, by bulging of the membrana, that there was fluid in the tympanic cavity, puncture of the drum should be made without delay. The slight constitutional symptoms of headache and general malaise which have sometimes followed the use of the cautery are not of sufficient importance to deter from its use, when to combat local conditions it is plainly indicated.

Discussion.

Dr. Langmaid referred to the case of a boy shown to the society some years ago at its meeting in Boston, and said: The patient was deaf, and a most discouraging report of his condition was given. I seized a growth, however, in the naso-pharynx, and, on withdrawing it, found it to be a large-sized soft tumor, which probably had extended from one Eustachian tube to the other. The boy was able to hear immediately after its removal, and his hearing afterward became perfect.

Dr. Mackenzie.—There is no class of cases in which more brilliant results can be secured from treatment than those in which middle-ear trouble depends upon adenoid growths of the pharynx, and especially in children. In Baltimore I find this a very common cause of deafness and catarrh in children, and the patients are absolutely cured on the removal of the growth. The variety of tumor which I generally see is the more or less soft papillomatous form. I nip the growth off with a pair of forceps, and then curette the base with one blade, fixing the part with the other. For a week or two after the operation I spray the pharynx with alcohol, in which there is some zinc, and this causes the base to shrivel up. The growth does not return. Some persons seem to entertain the idea that the patient should be let alone, supposing that the difficulty will disappear with puberty; but this practice is most pernicious, as it allows changes to take place which by the time of puberty may prove altogether irremediable. With regard to the absence of tendency to bleed, I do not agree with Dr. Robinson. I have found that in

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nearly all cases the finger becomes streaked with blood when introduced into the naso-pharynx. The bleeding is limited in amount, it is true, but to a certain degree it is almost pathognomonic. With regard to the ætiology of the growths, some gentlemen have referred to hereditary tendency, but the vast majority of cases which have come under my observation were due to some acquired difficulty in the pharynx, especially diphtheria.

Dr. Major.—Hypertrophy of the naso-pharynx, as Dr. Robinson has remarked, depends upon what one's idea of hypertrophy is. What one considers hypertrophy another may not so regard. I find it one of the common causes of mouth-breathing in children, and in them I usually remove the hypertrophied tissue with the finger-nail. In adults, in whom the growth is too tough to be removed in this manner, I employ some instrument.

Dr. Roe.—I have removed such growths with the forceps, with satisfactory results. Different forms of forceps may be employed. I think, with Dr. Mackenzie, that, if the finger comes away streaked with blood after an examination, there is probably a growth. I consider all the tissue which can be readily grasped with the growth by the forceps as legitimate prey.

Dr. Asch.—I agree with Dr. Robinson as to the comparative infrequency of adenoid vegetations of the naso-pharynx. In two rather large dispensary classes I have seen comparatively few cases. The patients rarely suffer much, the manifestations being usually confined to slight hoarseness. The treatment depends upon circumstances. In some cases I find the snare does exceedingly well; in others the forceps answers an equally good, if not a better, purpose. In no case have I resorted to the galvano-cautery, because I regard its introduction into the vault of the pharynx as rather a serious matter, the advantages to be gained not being commensurate with the dangers. I have treated many cases by the application of corrosive agents. Chromic acid sometimes does extremely well, applied on a bit of absorbent cotton wrapped on a probe. Tannic acid will sometimes relieve in a marked degree, if it does not cure. I do not regard the more radical measures as necessary in every case.

Dr. Jarvis.—With regard to the use of the forceps in removing growths from the vault of the pharynx, I have from an early period had a prejudice against it and manipulation with it in this part of the throat, a dark cavity where tissue of an indefinite amount and kind is grasped and torn from its attachments. The many variations in the anatomy of the parts further render such a procedure dangerous. This aversion has recently been shown not to be unfounded. About three months ago a case of what ultimately proved to be carcinoma came under my observation, which had been treated at the office of an expert in this city with the forceps. The patient stated that the suffering which he experienced from the use of the forceps in this expert's hands was most excruciating. The parts were very much torn, and ragged edges re-

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mained. Subsequent treatment by means of the snare produced scarcely any discomfort.

Dr. ROBINSON closed the discussion, and said: The more I examine throats the less am I disposed to interfere except in a very mild way, unless I have been enabled to conclude pretty positively that the symptoms from which the patient suffered were to be attributed to some particular morbid condition. I have no doubt of the truth of the statement contained in Dr. Shurly's paper, that, in at least one half of the cases operated upon by different methods, a considerable amount of harm is done. When I spoke of the galvano-cautery I referred to exaggerated cases in which other means of treatment had failed.

At the beginning of the afternoon session of May 13th, in the absence of the President and of those most interested in the question, it was moved: That the discussion of the NEW NOMENCLATURE be postponed, and that the scheme be first submitted to the Council and afterward by it to the Association in general session. Carried.

At the close of the regular literary exercises of the Congress, the President announced a final

Business Meeting

for the consideration of unfinished business, and for the election of officers for the ensuing year.

Objection having been made by some of the Fellows to the place suggested by the nominating committee for the next meeting, Dr. Hartman moved: That the time and place of the next meeting be named by the Council in the preliminary notice. Carried.

Attention was called to a resolution, passed at a regular meeting of the Association several years before, which read as follows:

"Any Fellow who has neither contributed a paper nor been present for three consecutive Congresses may, on vote of the Council, be dropped from the Association."

The election of officers for 1884–'85 then being in order, the Secretary was instructed to cast a formal ballot for the names presented by the Committee on Nominations. The following gentlemen were declared unanimously elected:

E. L. SHURLY, M. D., Detroit, President.

J. H. HARTMAN, M. D., Baltimore, First Vice-President.

WILLIAM H. DALY, M. D., Pittsburgh, Second Vice-President.

D. BRYSON DELAVAN, M. D., New York, Secretary and Treasurer.

THOMAS R. FRENCH, M. D., Brooklyn, Librarian.

FRANK DONALDSON, M. D., Baltimore, Member of Council.

FRANCKE H. BOSWORTH, M. D., New York, Member of Council for one year, to fill vacancy.

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THE RETIRING PRESIDENT, Dr. Bosworth, having thanked the Association for the honor which had been conferred upon him, and for the aid and forbearance extended to him during the session just completed, then introduced the President-elect, Dr. Shurly, of Detroit, who was escorted to the presidential chair by the retiring Vice-Presidents.

Dr. SHURLY, upon assuming the presidential office, said: "GENTLEMEN: It is now late, and I will not detain you long with a speech. I am really unable to express to you my gratefulness for the exalted position which I have received at your hands—a position which, of course, any member might very justly covet. I assure you in all sincerity, however, that I did not expect it, and do not think that I merit it, as there are other workers in this field who are much more prominently known. My fidelity to the Association, I hope, all are aware of. It has been as constant as I knew how to make it, and it will ever continue so to be. This, gentlemen, is a field in which we work together toward the creation of common knowledge. Common sense and common knowledge can only come from interchange of opinion and observation—a sort of rubbing off of the corners of one man's ideas with the ideas of others. Therefore I regard this body as a body creating knowledge, and, with that fact in view, I shall endeavor, during my administration as your humble servant, to do everything in my power to advance the interests of the Association. If the Council shall determine to meet the West in my native city, I can only say, on the part of my brethren in the profession, that you will be welcome, that they will appreciate the honor conferred upon them, and will do all they may to make your visit a pleasant and a profitable one."

The business of the session having been completed, the Sixth Annual Congress of the Association was declared adjourned.

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APPENDIX.

CONSTITUTION AND BY-LAWS.

LIST OF FELLOWS.

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THE

CONSTITUTION AND BY-LAWS

OF THE

AMERICAN LARYNGOLOGICAL ASSOCIATION.

REVISED 1884.

CONSTITUTION.

I.

This Association shall be known as the "American Laryngological Association."

II.

The object of this Association shall be the promotion of knowledge in all that relates to Diseases of the Upper Air Passages.

III.

FELLOWS.

The Fellows of this Association shall consist of Fellows, Corresponding Fellows, and Honorary Fellows.

The Fellows shall not exceed fifty (50) in number.

The Corresponding Fellows shall not exceed thirty (30) in number. The Honorary Fellows shall not exceed five (5) American and fifteen (15) Foreign.

Candidates shall be proposed to the Council, at least one month before the first day of meeting, by two Fellows, and, on recommendation of the Council, shall be balloted for at the first session of the ensuing Annual Meeting, a list of the names having been sent to every Fellow, with the notification of the meeting.

A two-thirds affirmative vote of all the Fellows present shall constitute an election.

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No one shall be eligible for active Fellowship until he shall have submitted to the Council a paper on some subject connected with Laryngological Science.

IV.

HONORARY AND CORRESPONDING FELLOWS.

The power of nominating Honorary and Corresponding Fellows shall be vested in the Council. The election shall take place in the same manner as that of ordinary Fellows. They shall enjoy all the privileges of other Fellows, but shall not be required to pay any fee, or be allowed to hold any office, or cast any vote.

V.

OFFICERS.

The Officers of the Association shall be a President, two Vice-Presidents, a Secretary and Treasurer, and a Librarian, who, with four other Fellows, shall constitute the Council of the Association.

The Secretary and Treasurer, and the Librarian, shall be permanent officers, holding office from year to year at the discretion of the Association.

They shall be nominated by a Committee of three Fellows, appointed by the President on the first day of the Annual Meeting. The Nominating Committee shall report on the following day, and the election take place by ballot, on the last day of the Meeting.

A majority of the votes cast shall constitute an election.

The President and Vice-Presidents shall enter upon their duties immediately before the adjournment of the meeting at which they are elected, and shall hold office for one year.

The members of the Council other than the President, Vice-Presidents, Secretary, and Treasurer, shall hold office for four years; except such of them as are elected at the first meeting; the first-named of whom shall retire at the end of one year; the second-named at the end of two years; the third at the end of three years, and the fourth at the end of four years, their places to be supplied by the election of one member at each Annual Meeting.

Any vacancy occurring between the Annual Meetings shall be filled temporarily by the action of the Council.

All Officers shall be eligible for re-election.

VI.

ANNUAL MEETING.

The Annual Meeting of the Association shall be held at such time and place as shall be designated by the Association at the final session of the previous meeting. It shall continue for three days, unless otherwise previously ordered by the Council.

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VII.

AMENDMENTS.

This Constitution may be amended by a three-fourths vote of all the Fellows present, at an Annual Meeting, provided that previous notice of the proposed amendment has been given in writing, and it shall be the duty of the Secretary to insert the proposed amendment in the notification of the approaching meeting.

BY-LAWS.

I.

PRESIDENT AND VICE-PRESIDENTS.

The President and Vice-Presidents shall discharge the duties belonging to their respective offices according to "Robert's Manual." The President shall be *ex-officio* Chairman of the Council.

II.

SECRETARY AND TREASURER.

As Secretary, he shall attend and keep a record of all the meetings of the Association, and of the Council, of which latter he shall be *ex-officio* Clerk.

At each Annual Meeting he shall announce the names of all who have ceased to be Fellows since the last report.

He shall provide a Register, in which the members attending shall record their names.

He shall superintend the publication of the transactions, under the direction of the Council.

He shall notify candidates of their election to Fellowship.

He shall send notifications of the Annual Meetings, one month previous to the meeting, and of the meetings of the Council.

At the Annual Meeting of the Association, he shall read the minutes of the previous meeting, and of all the Meetings of the Council that have been held during the current year.

As Treasurer, he shall receive all moneys due, and pay all debts.

He shall render an account thereof at the Annual Meeting, where an Auditing Committee shall be appointed to report.

III.

COUNCIL.

The Council shall meet as often as the interests of the Association may require.

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Four members shall constitute a quorum.

It shall have the management of the affairs of the Association, subject to the action of the Association at its Annual Meetings.

It shall consider the claims of the candidates recommended to it for admission to Fellowship, and shall have the sole power of making the nominations.

It shall arrange the order for the Scientific work at the Annual Meetings.

It shall not have the power to make the Association liable for any debts exceeding in total one hundred dollars, in the course of any one year, unless specially authorized by a vote of the Association.

It shall have the entire control of the publications of the Association, with the power to reject such papers or discussions as it deems best.

The President or any two members may call a meeting, notice of which shall be transmitted to every member two weeks previous to the meeting.

The Council shall determine questions by vote, or—if demanded—by ballot, the President having a casting vote.

The Council shall constitute a Board of Trial for all offenses against the Constitution and By-Laws, or for conduct unbecoming an honorable physician, and shall have the sole power of moving the expulsion of any Fellow.

IV.

ORDER OF BUSINESS.

The order of business at the Annual Meetings of the Association shall be as follows:

I. General meeting at 10 A. M. each day.

1. Report of Committees.
2. Reading and discussion of Papers.
3. Miscellaneous Business.

II. The Business Meeting shall be held during the first hour of the second morning session, at which only Fellows of the Association shall be present. The Secretary's Records shall then be read; the Treasurer's account be submitted; the Reports of Committees on other than scientific subjects be received; and all miscellaneous business be transacted.

III. Urgent business may be transacted at any meeting by unanimous consent.

V.

PAPERS, ETC.

The titles of all papers to be read at any Annual Meeting shall be forwarded to the Secretary, not later than one month before the first day of the meeting.

No paper shall be read before the Association which has already been printed or been read before another body.

No paper other than the President's Address shall consume more than

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twenty-five minutes in its reading, without the unanimous consent of the members present.

All papers that may be read before the Association, and accepted for publication, shall become the property of the Association, and their publication shall be under the control of the Council.

VI.

QUORUM.

A Quorum for business purposes shall be ten Fellows.

VII.

ASSESSMENT.

Every fellow shall pay in advance the sum of five dollars annually.

Any Fellow whose subscription shall be more than nine months in arrears shall be reminded of the fact by the Treasurer, in writing; in event of payment not being then made, he may, on vote of the Council, be dropped from the Association.

VIII.

AMENDMENTS.

Any of these By-Laws may be amended, repealed, or suspended by a two-thirds vote of the Fellows present, at any meeting.

IX.

Any Fellow who shall have failed to furnish a paper for three successive meetings, or who shall have absented himself from three successive meetings, may, on vote of the Council, be dropped from the Association.

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NAMES AND ADDRESSES OF FELLOWS.

Allen, Harrison, 117 South 20th Street, Philadelphia, Pa.
Asch, Morris J., 5 West 30th Street, New York.
Bean, C. E., 3 Wabasha Street, St. Paul, Minn.
Bosworth, F. H., 26 West 46th Street, New York.
Chapman, S. H., 193 Church Street, New Haven, Conn.
Cohen, J. Solis, 1431 Walnut Street, Philadelphia, Pa.
Cohen, S. Solis, 1431 Walnut Street, Philadelphia, Pa.
Daly, W. H., 71 Sixth Avenue, Pittsburgh, Pa.
De Blois, T. Amory, 5 Park Square, Boston, Mass.
Delavan, D. B., 1 East 33d Street, New York.
Donaldson, Frank, 108 Park Avenue, Baltimore, Md.
Douglas, J. H., 48 East 26th Street, New York.
Duncan, W. F., "The Mystic," West 39th Street, New York.
Elsberg, Louis, 614 Fifth Avenue, New York.
French, Thomas R., 469 Clinton Avenue, Brooklyn.
Glasgow, William C., 2847 Washington Avenue, St. Louis, Mo.
Hartman, J. H., 44 Franklin Street, Baltimore, Md.
Hitchcock, U. G., 51 West 29th Street, New York.
Holden, Edgar, 13 Central Avenue, Newark, N. J.
Hooper, F. H., 59 Marlborough Street, Boston, Mass.
Ingals, E. Fletcher, 64 State Street, Chicago, Ill.
Ives, F. L., 117 East 30th Street, New York.
Jarvis, William C., 25 East 31st Street, New York.
Johnson, H. A., 4 Sixteenth Street, Chicago, Ill.

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JOHNSON, WOOLSEY, 230 West 43d Street, New York.
JOHNSTON, SAMUEL, 80 West Monument Street, Baltimore, Md.
KEALHOFER, R. H., 609 Garrison Avenue, St. Louis, Mo.
KNIGHT, F. I., 131 Boylston Street, Boston, Mass.
LANGMAID, SAMUEL W., 129 Boylston Street, Boston, Mass.
LEFFERTS, G. M., 6 West 33d Street, New York.
LINCOLN, RUFUS P., 22 West 31st Street, New York.
MACKENZIE, JOHN N., 141 North Charles Street, Baltimore, Md.
MAJOR, GEORGE W., 1398 St. Catharine Street, Montreal.
MORGAN, E. CARROLL, 918 "E" Street, Washington, D. C.
PORTER, WILLIAM, 3137 Lucas Avenue, St. Louis, Mo.
RANKIN, D. N., 31 Sherman Avenue, Alleghany, Pa.
RICE, C. C., 115 East 18th Street, New York.
ROBERTSON, J. W., 115 Cass Street, Detroit, Mich.
ROBINSON, BEVERLEY, 37 West 35th Street, New York.
ROE, JOHN O., 28 North Clinton Street, Rochester, N. Y.
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